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AN ASSESSMENT OF THE RELATIONSHIP BETWEEN ENVIRONMENTAL AND FINANCIAL REPORTING BY SOUTH AFRICAN LISTED COMPANIES IN THE MINING SECTOR

by

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Submitted in fulfilment of the requirements for the M Com in Accounting in the Faculty of Economic and Management Sciences

University of Pretoria

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JULY 2011

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ACKNOWLEDGEMENTS

A sincere word of gratitude to Professor Quintus Vorster who agreed to be my supervisor for this pioneering study, and to Professor Elmar Venter who took over from Quintus as my supervisor and provided continuous support and guidance throughout the study period.

A special word of thanks to my colleague, Maryna Möhr-Swart, for your encouragement to conduct this study, and for holding the fort while I took study leave.

Without the unwavering support and encouragement of my wife Elsa, I would not have been able to start, never mind complete, this study. Thank you for putting up with my long hours of absence, and for providing physical and moral support during this period. My kids, Louis and Janina, also had to endure my absences, and I thank you for your patience.

Above all, I thank my Creator and Heavenly Father, whose creation we try to conserve by applying the tools of environmental accounting, for giving me the ability and perseverance to undertake this study.

Seakle Godschalk

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ABSTRACT

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The purpose of this study was to investigate the link between environmental reporting and financial reporting by listed South African mining companies in order to determine the degree of integration between these two processes.

Many companies disclose environmental information in their financial report (FR) or in a stand-alone environmental (ER) or sustainability report (SR). However, the environmental information contained in these reports does not always satisfy the information needs of shareholders, analysts and investors. In most cases, it appears as if current ERs do not sufficiently reflect the business implications of environmental issues for companies, hence the lack of interest in such reports among investors and analysts.

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Although many analyses of ERs and FRs have been performed, there is a lack of evidence regarding the relationship between financial reporting and environmental reporting. In an attempt to address this gap in the literature, this study examined the current practice of relating environmental reporting to financial reporting of selected mining companies. The environmental components of sustainability reports (SRs) and the financial reports (FRs) of six of the largest South African mining companies were examined to assess the relationship between environmental and financial reporting.

Forty-six environmental disclosure indicators relating to environmental information with business implications were identified from South African legislation, general accounting standards and best practice guidelines. The reports were examined using the indicators as benchmarks. The nature of disclosure for each indicator was recorded for each report. The level of linkage or integration regarding disclosures for the same indicator between the ER and its associated FR was assessed. Integration scores were determined for the main indicator categories, for individual indicators as well as for each company, based on seven potential levels of integration.

The study concluded that, generally speaking, the current link between environmental reporting and financial reporting among the sample companies was very limited.

The contribution of this study lies in the identification of a wide range of environmental disclosure indicators from a variety of sources, and the

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application thereof for assessing the relationship between environmental reporting and financial reporting.

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CHAPTER 1: INTRODUCTION

1.1 Background

The main purpose of this study was to investigate the relationship between environmental reporting and financial reporting by listed South African mining companies in order to determine the degree of integration between these two processes.

Traditionally, companies have been reporting their business activities in financial reports (FR)[1] or annual reports (AR), focusing on financial performance, with shareholders and investors as primary users of these reports. Owing to public pressure and increasing awareness of environmental and other corporate responsibilities, companies started to report on economic, social and environmental issues – collectively called sustainability issues or the triple bottom line (Cerin 2002a).

Initially, information on companies' environmental impact as well as other relevant environmental information was disclosed in the AR (Wiseman 1982). The first stand-alone environmental report (ER) was published in 1989, when the state-owned Norwegian oil and chemical corporation, Norsk Hydro, was pressured by massive environmental campaigns to report on the environmental impacts of its activities in order to salvage and restore its reputation (Cerin 2002a). These stand-alone ERs or sustainability reports

[1] Annexure 4 provides a complete list of frequently used terms and their abbreviations.

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(SRs) are used by a more diverse group of stakeholders than financial reports normally are, for example, employees, suppliers, customers, authorities, trade unions, media, interest groups, in addition to the typical users of the financial report (SAICA 1997; GRI 2002; Mitchell & Quinn 2005; IASB 2006).

During the 1990's a strong surge in environmental reports was experienced globally (Cerin 2002a). Erusalimsky, Gray and Spence (2006) estimated that around 1,500 stand-alone ERs were published annually at that time. Some researchers report that the number of ERs may have tapered off towards the end of the 1990s (Cerin 2002b) or more recently (Erusalimsky et al. 2006). However, other reports seem to indicate that the number of ERs is still increasing (Slater 2008; PwC 2010). In South Africa, Rea (2010) noted an increase in Global Reporting Initiative (GRI) based SRs from 44 to 86 between 2007 and 2009.

Despite the fact that these studies suggest that the number of ERs has been increasing, the environmental information contained in these reports (or in ARs) does not always satisfy the information requirements of one of the main target groups of these reports, namely shareholders, analysts and investors (Pleon 2005; Kuruppu & Milne 2010).

In a survey of 75 large Finnish firms in environmentally sensitive industries, Niskala and Pretes (1995) found that over the period 1987 to 1992 the amount of environmental disclosure in ARs doubled from 25% to 50%, but that most of the disclosures were in qualitative, rather than in quantitative or

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financial, form. They found that the disclosure of financial information, if at all, was not very systematic, and did not allow further analysis. Similar findings were reported by Deegan and Rankin (1999) in Australia, De Villiers (1999b, 2000) and KPMG (2001) in South Africa, Jupe (2007) in the United Kingdom (UK) (top 200 UK quoted companies), and Kaenzig, Friot, Saadé, Margni and Jolliet (2011) in 97 of the world's 600 largest joint stock companies in the automotive, banking, pharmaceutical and electronic hardware sectors.

In an Australian study, Deegan and Rankin (1997) found that analysts and brokers did not consider environmental information material to their decisions and did not use sources other than ARs to inform their decisions. Stainbank and Peebles (2006) investigated the usefulness of corporate ARs for preparers (financial managers of the top 100 South African companies) and users (institutional investors). They found that separate ERs ranked 18th out of 20 in importance with preparers and last (20th) with users. According to their findings, investors apparently did not find ERs particularly useful for investment decisions. Similar conclusions were drawn by other studies (SustainAbility 2006; Campbell & Slack 2008; Eccles & Krzus 2010).

In 2002, the GRI guidelines admitted that "[d]espite the growing overlaps between sustainability and financial reporting, the greatest challenge in bridging financial and sustainability reporting lies in translating economic, environmental, and social performance indicators into measures of financial value. ….. New methodologies are required to link performance in the economic, environmental, and social dimensions to financial performance"

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(GRI 2002: 71). A discussion document on management commentary (MC) of the International Accounting Standards Board (IASB 2005) suggested that the information in the MC, as part of the AR, should focus on the information needs of the investor and that sustainability reporting should be kept separate.

More recently, the level of discussion on the relationship between the AR and the ER/SR has been taken to a new level, with the need for integrated reporting as the focus. In 2006, the Accounting for Sustainability (A4S) project was initiated by His Royal Highness, the Prince of Wales. One of the objectives of the project is to develop practical guidance on and tools for embedding sustainability into decision-making and reporting processes (A4S 2011). In December 2007, A4S released a connected reporting framework (A4S 2007) as a practical guide to help companies to integrate environmental and social reporting into management reporting. The *King Report on Governance for South Africa 2009* (the King III Report) (IOD 2009) took the lead in corporate governance guidance by recommending that South African companies integrate their environmental, social and governance (ESG) reporting with financial reporting. Early in 2010, Eccles and Krzus (2010) published *One Report* promoting the case for publishing one integrated report. They state that, in most cases, there is very little linkage between the information published in ARs and the information published in SRs (Eccles & Krzus 2010). They confirm that the lack of standards or guidelines for integrated reporting is a stumbling factor for the effective implementation thereof (Eccles & Krzus (2010).

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In August 2010, the A4S and the GRI jointly announced the establishment of the International Integrated Reporting Committee (IIRC) to develop a framework for integrating ESG reporting with financial reporting (A4S 2010). This was preceded by the establishment of an Integrated Reporting Committee (IRC) in South Africa in May 2010. In January 2011, the IRC released a discussion paper for public comment (IRC 2011).

From the above discourse it is clear that the relationship between the FR and the ER has not yet been addressed satisfactorily. In most cases, it appears as if current ERs do not sufficiently reflect the business implications[2] of environmental issues for companies, hence investors' and analysts' lack of interest in such reports. Pressure is mounting on organisations to link environmental issues with their core strategy, and subsequently to link the reporting on environmental performance and the reporting on financial performance in order to make both types of reporting more relevant to a wider range of users. Ultimately, this would result in a fully integrated reporting process.

1.2 Importance of the study

Although many analyses of ERs and FRs have been performed (see Erusalimsky et al. [2006] and Jupe [2007] for an introduction to this topic), no

[2] Business implications of environmental issues include those implications that have a material impact on the financial bottom line of an organisation (apart from environmental expenditure being an expense for corporate social responsibility), future profitability and long-term sustainability of the organisation – either directly through expenses or indirectly through impacting on business operations and processes.

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study could be identified that specifically addresses the relationship between financial reporting and environmental reporting from the perspective of the business implications of environmental issues. The above discourse highlights the importance of considering this perspective in more detail. This justifies the rationale behind this study.

1.3 Research problem

Unless a more effective link between the ER and the FR is established, ERs will continue to have limited business value. The first step in the process of developing a closer link between environmental and financial reporting is to determine the existing requirements and expectations for such integrated reporting, and to assess whether companies have responded to the call for increased integration in reporting. The focus of this study was to assess the current status of the relationship between environmental reporting and financial reporting in South African mining companies. In order to do so, criteria for the assessment of this relationship had to be determined as well.

1.4 Research questions

The following basic research questions were posed for this research:

- What are the South African legal requirements regarding environmental disclosures in financial statements, FRs or other reports?

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- What are the accounting requirements regarding environmental disclosures in financial statements?

- Which other guidance is provided on the relationship between financial reporting and environmental reporting?

- What is the current status of the relationship between financial reporting and environmental reporting of listed South African mining companies?

1.5 Research objectives

In order to answer the research questions above, the following research objectives were pursued:

- Identify existing indicators for assessing the relationship between environmental reporting and financial reporting, taking South African legal and accounting requirements as well as other relevant guidance into consideration.

- Based on the above-mentioned indicators, assess the way in which mining companies currently deal with the relationship between their environmental reporting and their financial reporting. This will cover the following areas:

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- Environmental information contained in the FR.
- Business/financial information and business implications of environmental issues contained in the ER.
- Whether there is any link or, in the best case scenario, integration between the two reports.

1.6 Scope and delineation of the study

Although this study refers to ERs, it is recognised that publishing SRs is the norm in most companies. These reports address a combination of social, economic and environmental issues. This study focuses on ERs or the environmental components of SRs and their relationship with FRs, and does not consider the other components of SRs.

1.7 Research methodology

After determining criteria for assessing the relationship between environmental reporting and financial reporting, this study follows an empirical approach by assessing the relationship between the ERs and FRs of the selected companies based on these criteria. More detail on the roll out of this methodology is provided in Chapter 3.

1.8 Outline of remaining chapters

The remaining chapters are structured as follows:

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- Chapter 2 provides an overview of literature relevant to the topic of this study.
- Chapter 3 explains the research design followed in the study.
- In Chapter 4 the results of the study are presented and discussed.
- A reflection on the research problem, the research methodology and design, the results of the study and some recommendations for future study are provided in Chapter 5.

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CHAPTER 2: LITERATURE REVIEW OF THE RELATIONSHIP BETWEEN FINANCIAL REPORTING AND ENVIRONMENTAL REPORTING

2.1 Introduction

The main focus of this literature review is the relationship between environmental reporting and financial reporting. It is structured around four interrelated questions that build up to the actual relationship between environmental reporting and financial reporting.

- Question 1: *Does environmental performance affect financial performance of an organisation, in other words, do environmental issues have business implications?* If this is the case, then relevant environmental performance information should be disclosed to those who are interested in the financial performance of the organisation. This question is addressed in section 2.2.

- Question 2: *If environmental performance affects financial performance, which environmental information is relevant to this relationship and should be disclosed, in other words, which environmental disclosures have business implications?* This question is addressed in section 2.3.

- Question 3: *How do users use environmental information that affects financial performance?* This question is addressed in section 2.4.

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- Question 4: *How do the answers to the above-mentioned questions affect the relationship between environmental reporting and financial reporting?* This question is addressed in section 2.5.

2.2 Does environmental performance affect financial performance?

This section covers theoretical perspectives, as well as scientific and anecdotal evidence relating to the question whether environmental performance affects financial performance.

2.2.1 Theoretical perspective

Traditionally, responding to environmental challenges has been seen as a no-win proposition for business, with the related expenditure seen as a net cost (Porter 1991). However, in 1991, Porter posited that stricter environmental regulation would lead to innovative approaches that would enhance competitiveness (Porter 1991; Porter & Van der Linde 1995). This is known as Porter's hypothesis. Various authors (Walley & Whitehead 1994; Palmer Oates & Portney 1995; Maxwell 1996) criticised Porter's view as being too simplistic. Wagner, Schaltegger and Wehrmeyer (2001) moderated Porter's hypothesis and developed a model in which the traditionalist view and Porter's hypothesis were combined. The Porter hypothesis – in its original or moderated form – implies that environmental issues have business implications.

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Unerman and O'Dwyer (2007) argued the same case from a completely different angle: that stricter regulation of corporate social responsibility (CSR) and social and environmental reporting could also enhance corporate economic performance. They argued that insufficient reporting on CSR performance may lead to increasing levels of mistrust and misperceptions. The added costs of compliance would probably be compensated for by a reduction in costs associated with negative anti-business actions.

2.2.2 Scientific evidence

According to Cormier and Magnan (1997), the first study to test the existence of an association between pollution and economic performance was conducted by Bragdon and Marlin (1972). Bragdon and Marlin (1972, cited by Cormier & Magnan 1997) found a positive relation between pollution control and economic performance among a sample of pulp and paper companies. In a follow-up empirical study of 18 pulp and paper companies in the United States (US), Spicer (1978) concluded that companies with better pollution control records tend to have greater profitability and a higher price/earnings ratio. However, no inferences about causality can be drawn from either study (Cormier & Magnan 1997). In a study of the relationship between environmental performance (represented by a corporate pollution measure) and market valuation of between 20 and 30 listed Canadian companies, Cormier and Magnan (1997) found a positive relationship between a company's environmental performance and its market valuation. In a South African study, Wingard and Vorster (2001), used the control list developed by

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Bogiages and Vorster (1993) and refined by Van Niekerk (1998) (see section 2.3.3) as a tool to measure the environmental performance of South African listed companies. They correlated the environmental performance of these companies with their financial performance and found a positive relationship between environmental performance and financial performance (Wingard 2001; Wingard & Vorster 2001).

However, linking environmental performance with financial performance may be fraught with other agendas. Milne, Tregidga and Walton (2009) investigated the triple bottom line or sustainable development (SD) reports of eight founding members of the New Zealand Business Council for Sustainable Development. They found that the reports explicitly promoted a win-win approach where a business case for SD was made out with a focus on eco-efficiency (using less resources or producing less waste per unit produced) but ignoring the overall impact of economic growth and associated increase in production, resulting in an increase in the absolute impact on the environment. This was part of a legitimising effort and could mask unsustainable business practices (Milne et al. 2009).

Taking into account stakeholder expectations of sustainability reporting is equivalent to the outside-in approach described by Burritt and Schaltegger (2010). They argue that stakeholder engagement in this process can help improve corporate economic performance (Schaltegger & Burritt 2005; Burritt & Schaltegger 2010). Financial performance of a company may be influenced by stakeholders if they are satisfied with the company's disclosures. In an

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experimental study in Malaysia, Elijido-Ten, Kloot and Clarkson (2010) tested the response of a variety of stakeholders, including media representatives, environmental activists, employees, suppliers, creditors, government officials, customers and shareholders to the non-disclosure of environmental information they would like to see disclosed. Although the stakeholders gave different responses, the most common response was to withdraw support, sometimes even to discourage support by others. This would obviously impact on the financial performance of the company (Elijido-Ten et al. 2010).

Dhaliwal, Li, Tsang and Yang (2011) examined the relationship between voluntary non-financial disclosure and the cost of equity capital. They found that firms which disclosed superior social responsibility performance attracted dedicated institutional investors and analyst coverage, and enjoyed a reduction in the cost of equity capital. In addition, the analysts achieved lower absolute forecast errors and dispersion for these firms. Firms with a high cost of equity capital tended to initiate social performance disclosures and exploited the resulting lower cost of equity capital by actively raising equity capital.

2.2.3 Anecdotal evidence

The *King Report on Corporate Governance for South Africa 2002* (the King II Report) stated that "[t]here is no doubt … that these so-called non-financial issues have significant financial implications for a company" (IOD 2002: 92). The report provided several examples of business implications of

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sustainability issues, such as environment-related risks, market access based on formal environmental management systems, environment-related competitiveness such as cleaner production, compliance with environmental legislation, pollution and environmental rehabilitation requirements (IOD 2002:94, 110-113).

In its 2nd generation *Guidelines for Sustainability Reporting*, the GRI stressed the need for the development of new methodologies to link environmental performance to financial performance (GRI 2002:71). In a guidance document on non-financial business reporting, the International Corporate Governance Network (ICGN) recognised that non-financial information may affect short- and long-term performance and value creation (ICGN 2008). The founder and president of the SRI World Group, Jay Falk, referred to a growing body of research that shows a link between superior sustainability performance and financial performance (Falk 2005).

The AccountAbility's Principles Standard (APS) of the London-based non-profit organisation, AccountAbility, pointed out that understanding sustainability issues will have an impact on the organisation's performance, including economic, social, environmental and longer-term financial performance (AccountAbility 2008). Financial considerations play a role in determining materiality, one of AccountAbility's three main principles (AccountAbility 2008). AccountAbility's first assurance standard linked the recent rapid growth in public sustainability reporting, particularly by the business community, among other things to investor interests in emerging

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risk-related aspects of financial performance (AccountAbility 2003). Reporting guidelines have emerged to drive up the quality of reporting, to enable comparability, and for investors in particular, to relate non-financial and financial performance (AccountAbility 2003). In its guidance on assurance of SRs, the standard indicates that the materiality test must consider those aspects of non-financial performance where a significant legal, regulatory or direct financial impact exists (AccountAbility 2003).

2.2.4 Conclusion: Does environmental performance affect financial performance?

There seems to be considerable consensus that environmental performance may affect financial performance. This consensus is to a large extent based on theoretical arguments (for example, Porter 1991; Porter & Van der Linde 1995; Wagner et al. 2001) and anecdotal evidence (IOD 2002; GRI 2002; ICGN 2008). Some empirical evidence exists which generally confirms the argument that environmental performance may affect financial performance positively (Bragdon & Marlin 1972; Spicer 1978; Cormier & Magnan 1997; Dhaliwal et al. 2011).

2.3 Which environmental disclosures have business implications?

This section covers accounting and theoretical perspectives as well as scientific and anecdotal evidence relating to the question which environmental disclosures have business implications.

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2.3.1 Accounting perspective

The general requirements for financial reporting outside the financial statements *sensu stricto*, might give us some clues as to which environmental information might be considered of business importance. The *Preface to the International Financial Reporting Standards* (IASB 2002) refers to other financial reporting that includes information outside the financial statements that assists with the interpretation of the financial statements or improves the ability of users of these statements to make economic decisions. IAS 1 *Presentation of Financial Statements* states that many entities present information outside the financial statements that outline among others the principal uncertainties entities face (IASB 2003a). The *Exposure Draft: Management Commentary* states that management commentary should, among other things, communicate information about events and circumstances that changed the entity's economic resources. It should also explain the main trends and factors that are likely to affect the entity's future performance, position and development (IASB 2009).

2.3.2 Theoretical perspective

Based on legitimacy theory, O'Donovan (2002) found that the content of environmental disclosures in ARs was mainly determined by what companies found most important to disclose at that particular stage to present a positive picture to the public. Also following legitimacy theory, Mobus (2005) examined

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the relationship between mandatory environmental performance disclosure and subsequent environmental regulatory performance. The study found that US oil companies enhanced their environmental performance subsequent to having disclosed non-performance. According to the study, linking financial reporting to environmental performance gained greater importance as concern about the environmental effects of business operations became more acute within the investor, regulatory and public arenas.

2.3.3 Scientific evidence

Bogiages and Vorster (1993) developed a checklist of environmental disclosures in ARs as a tool for measuring the degree of "green reporting" in annual reports of South African companies. Although the focus of this checklist was not specifically on the business implications of environmental disclosures or on the relationship between ERs and FRs, several of the environmental disclosures included in the checklist have business implications. Van Niekerk (1998) refined the control list developed by Bogiages and Vorster (1993) and developed an associated weighting scale to measure the quality of environmental disclosures in FRs (Van Niekerk 1997, 1998; Van Niekerk & Vorster 1998). In another South African study, De Villiers (1998) found that all three groups that were surveyed – managers, auditors and users of reports – were in favour of the disclosure of environmental information in the annual financial statements. The annual financial statements seemed increasingly to be regarded as a source of information on all the activities of an organisation. All three groups were

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equally in favour of more disclosure of a financial nature, including environmental risks and impacts. Studies by Deegan and Rankin (1999) and Thompson and Cowton (2004) provided specific guidance on environmental disclosures with business implications.

Heitzman, Wasley and Zimmermann (2010) found that two main factors play a role in a manager's decision to disclose information: firstly, an obligation to disclose information that is material to the users of the report and, secondly, an incentive for voluntary disclosure (generally that the incremental benefit of such disclosure exceeds the costs thereof). In a survey among American, British and Australian shareholders, De Villiers and Van Staden (2010) found that most of the shareholders wanted disclosure of environmental risks and impacts, environmental policy, measurable targets, actual performance and environmental costs.

2.3.4 Anecdotal evidence

In 1991, Clulow (1991) pleaded for a more active role to be played by the South African Institute of Chartered Accountants (SAICA) in providing guidance on environmental disclosures in financial statements. He referred to a study of 42 ARs of South African companies in the *Financial Mail* top 100 companies, which showed that there was no indication in the financial statements of expenditure related to repairing the environment. SAICA (1997) published guidelines for the disclosure of environmental information in the AR.

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Rogers (2005) provided detailed guidance from an accounting perspective on environmental information that should be disclosed in ARs.

In 2007, the A4S project published guidance (A4S 2007) on how environmental and social issues that are material to the organisation's success can be integrated into the AR. Environmental issues they recommend for disclosure include the following:

- Environmental trends that have a material impact on the organisation.
- Principal environmental risks and opportunities.
- Key environmental resources on which the organisation is dependent.
- Key environmental performance indicators.
- Targets for environmental KPIs and performance against those targets.

In December 2008, the ICGN, whose members are investors who have combined assets of $15 trillion under management, issued guidance on non-financial business reporting. The document addresses the non-financial information needs of investors. They recognise the role of SRs for multiple stakeholders but affirm that non-financial business information material to investors should be set out succinctly in the AR. The non-financial information should provide the context of the financial statements and identify the risks, opportunities and prospects that may affect future performance, as well as governance measures to manage these factors. Non-financial information should not be considered in isolation but be integrated with financial information. Non-financial information should be provided both in quantitative

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and qualitative terms. The importance of stakeholder relations is emphasised whilst environmental risks such as climate change and pricing of environmental impacts (for example, through carbon trading schemes) are mentioned as specific environmental examples of non-financial business information (ICGN 2008). In 2010, the Society of Investment Professionals in Germany published an exposure draft of KPIs for ESG issues. The document contains a large number of environmental indicators specifically formulated for ten different industry sectors (DVFA 2010).

2.3.5 Conclusion: Which environmental disclosures have business implications?

Limited academic research has been published (Deegan & Rankin 1999; Thompson & Cowton 2004; De Villiers & Van Staden 2010) on environmental disclosures with business implications. Specific guidance on this topic is more readily available from general sources, notably SAICA (1997), Rogers (2005), A4S (2007), ICGN (2008) and DVFA (2010)[3].

2.4 How do users use environmental information that affects financial performance?

This section covers scientific and anecdotal evidence relating to how users use environmental information that affects financial performance.

[3] The publications by SAICA (1997), Deegan and Rankin (1999), Thompson and Cowton (2004) and Rogers (2005) are analysed in more detail in Annexure 1, sections 4.1 and 4.2.

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2.4.1 Scientific evidence

In an early experimental study, Belkaoui (1980) tested the effect of disclosure of pollution abatement costs on the investment decisions of bankers and accountants. He found that such disclosures influenced the investment decisions of both groups, but in different ways. Deegan and Rankin (1997) also found that environmental information was used differently by different types of users. They carried out a survey of approximately 120 representatives of various Australian groups of AR users, including shareholders, stockbrokers, accounting academics, financial institutions and general reviewing or oversight groups, as to the importance or materiality of environmental information to decisions they may wish to make. The results indicated that shareholders and review groups believed environmental information to be material to their decisions and that they sought the disclosure of this information in corporate ARs. The other three groups, including analysts and brokers, that were surveyed, did not consider environmental information material to their decisions.

Apart from the use of environmental information by different users, the use of different types of environmental information by the same users has also been studied. In an experimental study, Chan and Milne (1999) found that investors reacted negatively to negative environmental disclosures but not necessarily positively to positive disclosures. Some investors reacted positively to positive environmental disclosures whilst others reacted negatively, apparently reasoning that the company squandered valuable resources. This result

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seemed to imply that companies may choose to disclose positive environmental performance in general terms.

In another experimental study, Rikhardsson and Holm (2008) also found differential use of different kinds of environmental information. They conducted an experiment with 88 final-year finance students. They had to make short-term and long-term investment decisions based on different scenarios – with no environmental information added, with positive qualitative environmental information added and with positive qualitative as well as quantitative environmental information added. They found that positive qualitative environmental information positively affected short-term investment decisions. The positive qualitative environmental information seemed to be correlated with risk reduction. The qualitative environmental information did not affect long-term investment decisions. Unexpectedly, the quantitative environmental information, which was meant to be supportive of the qualitative environmental information, resulted in a slightly negative investment decision in the short-term investment strategy. The authors concluded that the results seemed to indicate that the finance students, who were not familiar with environmental information, might not have understood the quantitative environmental information. This implied that quantitative environmental information should only be disclosed to audiences that can understand and interpret the information, or that such information should be explained to the uninitiated.

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Cormier and Magnan (1997) investigated how Canadian investors assess the financial implications of a firm's environmental performance, as measured by its pollution record relative to existing regulations. As part of their study, they assessed the usefulness of social and environmental information for investors. They found that investors used information about a firm's negative pollution performance to reduce their valuation of the firm's stock to provide for implicit environmental liabilities that are currently not accounted for in the balance sheet.

Thompson and Cowton (2004) found that bankers attached considerable importance to the AR for obtaining environmental information, which they used to support their lending decisions, notwithstanding its traditional limitations as a source of information on corporate environmental impact.

In a survey among American, British and Australian shareholders, De Villiers and Van Staden (2010) found that the majority of the shareholders wanted disclosure of environmental risks and impacts, environmental policy, measurable targets, actual performance and environmental costs. The primary reason for them wanting this information was to hold the company accountable for its environmental stewardship, whereas the secondary reason was that they considered the information material for financial decision-making. More than half of the respondents indicated that they used disclosures of environmental risks and impacts, environmental policy, waste and emissions information, and environmental performance against targets.

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Most of them used this information for investment decisions, rather than accountability or own interest.

Virtually all research on the use of environmental disclosures has been performed in respect of investors (see Berthelot, Cormier & Magnan [2003] and Kuruppu & Milne [2010] for an overview of such research). Kuruppu and Milne (2010) conducted an experimental study to test a group of students regarding their employment decisions. The students were provided with environmental disclosures by the company, news items that showed bad practices by the company and (one group) an assurance statement for the disclosures. They found that some, but not all, of the students were influenced by the environmental disclosures in their decision-making about employment. The assurance statement did not have a noticeable effect on their decisions.

2.4.2 Anecdotal evidence

The publication of a guidance document on non-financial business reporting by the ICGN (ICGN 2008), a group of large investors, confirms the importance of such information for investors' decision-making. In a research document, the GRI addressed the importance of ESG disclosures for the investor community and of linking ESG performance with business strategy (GRI 2009). The publication of an exposure draft of KPIs for ESG issues by the Society of Investment Professionals in Germany (DVFA 2010) heralds a new era in which investment professionals indicate themselves which environmental indicators are important for their investment decisions.

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2.4.3 Conclusion: How do users use environmental information that affects financial performance?

Some specific research on the use of environmental information has been published, with a focus on investors (Cormier & Magnan 1997; Chan & Milne 1999; Rikhardsson & Holm 2008), bankers (Belkaoui 1980; Thompson & Cowton 2004) and shareholders (Deegan & Rankin 1997; De Villiers & Van Staden (2010), with one study reporting on research on the use of environmental disclosures in employment decisions (Kuruppu & Milne 2010) . On the one hand, the publications referred to in section 1.1 point out the limited usefulness of environmental information in its current format for investors. On the other hand, the research reviewed in this section reveals that investors and other people interested in the financial performance of organisations make some use of this information.

2.5 The link between environmental reporting and financial reporting

This section covers an accounting perspective as well as anecdotal evidence relating to the link between environmental reporting and financial reporting.

2.5.1 Accounting perspective

In 2005, the IASB (2005) issued a discussion document on MC. This document is of particular relevance to this study as it addresses the

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relationship between the various components of the FR. Furthermore, it touches on the role of non-financial reporting. The discussion document views MC as the primary component of the information within the term "other financial reporting … provided outside the financial statements" referred to in the *Preface to the international financial reporting standards* (IASB 2005: paragraph 7). The discussion document defines MC as "information that accompanies financial statements as part of an entity's financial reporting. It explains the main trends and factors underlying the development, performance and position of the entity's business during the period covered by the financial statements. It also explains the main trends and factors that are likely to affect the entity's future development, performance and position" (IASB 2005:19).

MC should not be seen as a replacement for other forms of reporting addressed to a wider stakeholder group, for example, sustainability and CSR reports (IASB 2005:30). The discussion document recommends that MC should include information on the organisation's key resources, risks and relationships. These will largely relate to non-financial aspects of the business, which could, for example, include access to natural resources (IASB 2005:122). In 2009, an exposure draft on management commentary was published for comments (IASB 2009), followed by an International Financial Reporting Standards (IFRS) practice statement on MC (IASB 2010b). In essence, the exposure draft and the practice statement contain the same guidance as the discussion document.

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2.5.2 Anecdotal evidence

The GRI provides an early discussion of the relationship between sustainability (and implicitly environmental) and financial reporting. The 2nd generation GRI *Guidelines for Sustainability Reporting* (GRI 2002) admitted that "[d]espite the growing overlaps between sustainability and financial reporting, the greatest challenge in bridging financial and sustainability reporting lies in translating economic, environmental, and social performance indicators into measures of financial value. ….. New methodologies are required to link performance in the economic, environmental, and social dimensions to financial performance" (GRI 2002:71).

The guidelines further refer to the fact that although most companies publish separate FRs and SRs, a few corporations had started to experiment with publishing a single AR integrating information on environmental, social, economic and financial performance. In support of this initiative, the guidelines dedicated a whole section (Annex 2 to the guidelines) to a comprehensive discussion of the linkages between sustainability and financial reporting.

Two persons intimately involved with the GRI, Slater and Gilbert (2004), made a strong case for narrowing the gap between financial and sustainability reporting and gave tips on some aspects where this could be done. They challenged market institutions to develop a structure for business reporting that enables existing financial reporting systems to work in a synergistic

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manner with other disclosures. They suggested that the link between sustainability reporting and financial reporting lies in value creation. Aspects where this could be made more visible include environmentally driven innovation, exposure to risks and contingent liabilities, and assessment of future competitive advantage. They further suggested that much of the qualitative information in SRs can easily be translated into financial terms and, therefore, be made more useful for investors and analysts.

The American Institute of Certified Public Accountants (AICPA), in an attempt to educate its members, published a number of frequently asked questions on sustainability reporting on its website. Most of the questions related to sustainability reporting *per se*. However, one question specifically addressed the relationship between sustainability reporting and financial reporting. It explained the main purpose of both types of reporting but regarding any relationship between both types of reporting only stated that "sustainability reporting and financial reporting both communicate about risks and intangibles, but do so in ways that are different and partially complementary" (AICPA 2003). No indication was given of how they differ from or complement each other.

The Institute of Chartered Accountants in England and Wales (ICAEW), in partnership with the UK Environmental Agency (UKEA) published guidance on integrating environmental issues into annual financial reporting (ICAEW & UKEA 2009). While recognising the value of stand-alone environmental reports, they recommend that key environmental issues that affect business

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performance, including impacts and opportunities associated with the environment, should be included in annual financial reports.

Recently, the level of discussion on the relationship between the AR and the ER/SR has been taken to a new level, with the need for integrated reporting as the focus. In 2006, the A4S project was initiated by His Royal Highness, the Prince of Wales. One of the objectives of the project is to develop practical guidance on and tools for embedding sustainability into decision-making and reporting processes (A4S 2011). In December 2007, A4S released a connected reporting framework (A4S 2007) as a practical guide to help companies to integrate environmental and social reporting into management reporting. In a research report, the GRI (2009) stressed the necessity for companies to report on their ESG performance and their business performance in an integrated manner. This can take place in a single integrated SR/AR or in separate complementary documents. Globally, the King III Report (IOD 2009) became the first official publication on corporate governance to firmly recommend that companies' financial and sustainability reporting processes should be integrated, either in a single report or in two complementary reports. The essence of King's (IOD 2009) recommendations is that the two components should talk to each other. The application of the King III Report (IOD 2009) recommendations has become mandatory for listed South African companies. Linking up with the King III Report (IOD 2009), Ernst and Young (2010) published a suggested content outline for an integrated report.

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Eccles and Krzus (2010) became the proponents of a single, integrated *One Report* in which all financial and ESG information should be combined. Their premise is that such a single report will ensure truly integrated reporting. They find that, in most cases, there is little linkage between the information published in separate SRs and ARs, even in so-called integrated reports. They point out that one of the biggest challenges for integrated reporting lies in the lack of quantification of the business implications of ESG information. In August 2010, the A4S and the GRI jointly announced the establishment of the IIRC to develop a framework for integrating ESG reporting with financial reporting (A4S 2010). This was preceded by the establishment of the IRC in South Africa in May 2010. In January 2011, the IRC released a discussion paper for public comment (IRC 2011).

2.5.3 Conclusion: The link between environmental reporting and financial reporting

The discussion relating to the link between environmental reporting and financial reporting currently takes place outside the scientific domain (GRI 2002; GRI 2009; Slater & Gilbert 2004; A4S 2007; IOD 2009; Eccles & Krzus 2010; IRC 2011), with some discussion in the accounting domain (IASB 2009). The discussion is culminating in the call for integrated reporting.

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2.6 General conclusion drawn from literature reviewed

There seems to be growing consensus that the environmental performance of an organisation may affect its financial performance. This consensus is mostly based on theoretical considerations (for example, Porter 1991; Porter & Van der Linde 1995; Wagner et al. 2001) although some empirical evidence is available to confirm the contention (Bragdon & Marlin 1972; Spicer 1978; Cormier & Magnan 1997; Dhaliwal et al. 2011).

In view of the slowly growing evidence that environmental performance may affect financial performance, the question of which environmental information has business implications and should be disclosed becomes more relevant. Limited research on this topic has been conducted (for example, Deegan & Rankin 1999; Thompson & Cowton 2004; De Villiers & Van Staden 2010). Guidance on the matter comes primarily from general guidance documents, especially during the past decade (SAICA 1997; Rogers 2005; A4S 2007; ICGN 2008; DVFA 2010). Indications are that the current format of environmental disclosures generally does not support interpretation of the business implications thereof, and is, therefore, not very useful for investors (Niskala & Pretes 1995; Deegan & Rankin 1999; De Villiers 1999b; De Villiers 2000; Jupe 2007; Kaenzig et al. 2011).

Research on the use of environmental disclosures, in particular by investors and other people interested in the financial performance of organisations, provides conflicting evidence. On the one hand, evidence has been produced

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to indicate that investors and their like do not find environmental information useful to their decision-making (Deegan & Ranking 1997; Stainbank & Peebles 2006; SustainAbility 2006; Campbell & Slack 2008; Eccles & Krzus 2010). On the other hand, evidence exists that investors use environmental information (Cormier & Magnan 1997; Deegan & Rankin 1997; Thompson & Cowton 2004; De Viliers & Van Staden 2010). This aspect requires further investigation, but falls outside the scope of this study.

Lastly, the actual relationship between environmental reporting and financial reporting has not been the subject of much research. This topic has only been discussed during the past decade, and most of the inputs for the discussion come from general documentation and not from academic research (GRI 2002; GRI 2009; Slater & Gilbert 2004; A4S 2007; IOD 2009; Eccles & Krzus 2010; IRC 2011) with some discussion in accounting circles (IASB 2009). There is increasing pressure to integrate environmental and financial reporting.

In general, it can be concluded that limited research has been done on the actual effect that environmental performance has on financial performance, on the specific environmental information that needs to be disclosed and on the use of such information by users, in particular those users with an interest in the financial performance of organisations. Virtually no research has been done on the optimal relationship between environmental reporting and financial reporting. This whole field has a need for further research.

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This situation reaffirms the rationale of this study to identify relevant environmental disclosure indicators (addressing the second question) and to assess the relationship between environmental and financial reporting (addressing the fourth question), as a contribution to this field of knowledge.

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CHAPTER 3: RESEARCH DESIGN

3.1 Introduction

This study comprises two main components:

- Firstly, a non-empirical component to identify existing environmental disclosure indicators for assessing the relationship between environmental reporting and financial reporting.

- Secondly, an empirical study assessing the reporting practice of selected companies as far as the relationship between environmental reporting and financial reporting is concerned, based on the above-mentioned environmental disclosure indicators.

The research method used for each of these components is described in more detail below.

3.2 Identification of environmental disclosure indicators

The identification of indicators for assessing the current relationship between environmental reporting and financial reporting in the sample companies consisted of four steps:

- Identifying environmental disclosure indicators from relevant South African legislation.

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- Identifying environmental disclosure indicators from relevant accounting standards.
- Identifying environmental disclosure indicators from a number of best practice guidelines (BPGs) relating or referring to sustainability reporting as well as from literature.
- Combining and grouping the identified environmental disclosure indicators into an environmental disclosure index (EDI) to be used for the assessment of the reports.

3.2.1 Identifying environmental disclosure indicators from relevant South African legislation

The reporting practices of South African companies must comply with all legal requirements. Any environmental disclosure requirements contained in South African legislation will, therefore, be primary indicators for assessing the reporting practice of South African companies in respect of the relationship between environmental and financial reporting. All South African environmental legislation in the Cameron Cross database[4] of environmental legislation as well as relevant mining and company legislation was scrutinised in detail and any environmental reporting requirements were identified.

[4] The Cameron Cross environmental database contains all South African environmental legislation and nothing else.

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3.2.2 Identifying environmental disclosure indicators from relevant accounting standards

As South African companies are required to comply with IFRSs as well as international accounting standards (IASs), all IFRSs, IASs and international financial reporting interpretations (IFRICs) were scrutinised for any disclosure requirements relating to environmental issues. In addition, the international auditing practice statement (IAPS) 1010: *The consideration of environmental matters in the audit of financial statements* (IAASB 1998) was also scrutinised. Owing to the focus of these standards on the information needs of primarily financial stakeholders, it was assumed that any such requirements relate to the business implications of environmental issues. All environment-related reporting requirements were identified.

3.2.3 Identifying environmental disclosure indicators from a number of best practice guidelines relating or referring to sustainability reporting as well as from literature

Various relevant BPGs relating to sustainability reporting that had been published at the time that this study was undertaken were scrutinised in order to determine the guidance they may provide on environmental disclosures with potential business implications. These guideline documents were identified by means of a survey of a broad array of available guidance documents based on available literature as well as the researcher's own

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knowledge[5]. The completeness of the guidance documents that were scrutinised cannot be guaranteed. In addition, literature that contained specific guidance on relevant environmental disclosures with potential business implications was also used (Deegan & Rankin 1999; Thompson & Cowton 2004; Rogers 2005). The following BPGs were scrutinised for guidance on environmental disclosures with business implications:

- The SAICA *Guidance on Stakeholder Communication in the Annual Report* (SAICA 1997).
- The South African Mineral Resource Committee's *Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves* (SAMREC 2007).
- The King II Report on corporate governance in South Africa (IOD 2002).
- The Johannesburg Stock Exchange Socially Responsible Investment index (JSE 2004).
- The GRI's 3rd generation *Guidelines for Sustainability Reporting* (GRI 2006).

[5] The researcher is actively consulting and training in the field of sustainability reporting and, therefore, has exposure to a wide variety of authoritative guidance documentation on sustainability reporting.

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3.2.4 Combining and grouping the identified environmental disclosure indicators into an environmental disclosure index (EDI) to be used for the assessment of the reports

All identified environmental disclosure indicators were combined and grouped into the following broad categories that emanated from the sources:

- Assets and liabilities.
- Compliance.
- Strategic management.
- Audit.
- Operational management.

All indicators were incorporated in a standardised EDI, which was used for assessing the reports. The same indicators were used for the assessment of the FR and the ER.

3.2.5 Result of the identification of environmental disclosure indicators and the development of the EDI

The review of relevant legislation, accounting standards and guidelines for sustainability reporting from which environmental disclosure indicators were identified, is documented in Annexure 1. The EDI incorporating the identified environmental disclosure indicators, as well as the source of each indicator, is illustrated in Annexure 2.

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3.3 Assessment of reports

This section describes the research approach in respect of the assessments of the reports. It consists of three components:

- The use of content analysis for the analysis of the reports (section 3.3.1)
- The identification of levels of integration between FRs and ERs (section 3.2.2).

3.3.1 Content analysis

Both the FR and the associated ER (or in the case of Gold Fields the integrated AR) for each company were assessed using the EDI. The qualitative content analysis technique was used for the assessment of the reports against the environmental disclosure indicators.

Content analysis is widely used for the analysis of ERs (for example, Guthrie & Parker 1989; Zeghal & Ahmed 1990; Harte & Owen 1991; Ness & Mirza 1991; Patten 1991; Gray, Kouhy & Lavers 1995; Buhr 1998; Kolk 1999; Wilmshurst & Frost 2000; Cormier & Gordon 2001; Patten & Crampton 2004; Hasseldine, Salama & Toms 2005; Coupland 2006; Van Staden & Hooks 2007; Lynch 2010). In most cases content analysis is used in a quantitative or mechanistic manner, but it can be applied in a qualitative or interpretative

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manner as well (Mouton 2005; Beck, Campbell & Shrives 2010; examples of people who used the qualitative/interpretative manner include Buhr 1998; Coupland 2006). There are some caveats when using content analysis:

- There should be a clear understanding of the terminology and categories of information used, that is, shared meaning should be present (Gray et al. 1995; Beattie & Thomson 2007).
- It is preferable that only one researcher be used for the coding of the reports under investigation to ensure consistency (Guthrie & Parker 1989; Zeghal & Ahmed 1990; Lynch 2010). If more than one coder is used, proper training and cross-checking need to take place (Abeysekera 2008).
- Data collection and analysis should be transparent in order to ensure replicability (Gray et al. 1995; Beattie & Thomson 2007).

The long history of environmental reporting has resulted in the development of a set of well-defined environmental disclosure indicators. The indicators selected for this study were properly defined in the EDI. The use of a standardised EDI and its application to both the FRs and the ERs ensured consistency in the identification and recording of relevant disclosures.

Only one coder was used for this study (the researcher) to ensure consistency.

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The respective reports were scrutinised in detail and every possible reference to any one or more of the assessment indicators was recorded on the EDI for that company. If there was doubt regarding the relevance of certain information, it was included in the initial coding for future analysis. If, during the analysis of the results, it was found not to be relevant, it was deleted. If a certain disclosure was relevant to more than one indicator it was recorded under all relevant indicators. Therefore, an inclusive approach was followed when recording the disclosures.

3.3.2 Levels of integration

The assessment of both reports of the companies included in the sample was recorded on one EDI to enhance analysis in terms of linkages. On completion of the coding, the results were analysed to identify linkages between the FR and the ER of the same company. Each linkage was associated with a level of integration.

Seven levels of integration, in ascending order, were identified for use in the analysis by considering the range of possible outcomes. This structure was re-evaluated after the content analysis, as additional categories may have become eminent from the analysis. However, no changes were necessary.

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3.3.2.1 Level 1: No disclosure of an indicator

The lowest level of integration is associated with a total lack of disclosure on an indicator, either in the FR or in the ER. This lack of disclosure may be due to various reasons. The topic of the indicator may not be relevant to the company, the information may not be sufficiently material to justify separate disclosure or the company may have neglected to report on the matter.

3.3.2.2 Level 2: Conflicting disclosures

In this scenario, information on related aspects of an indicator is disclosed in both the FR and the ER, but the information is in conflict with each other. For example, the number of the same type of serious incidents reported in the ER and the FR could differ. Based on prior perusal of FRs and ERs where such conflicting reporting had been observed, this scenario was included as a possibility. Disclosing conflicting information in the FR and the ER points towards a lack of integration between these two reports.

3.3.2.3 Level 3: Disclosure in either the FR or the ER

In this case, information on an indicator was disclosed in either the FR or the ER. For example, information in respect of rehabilitation provision is disclosed in the FR, but not in the ER. This type of disclosure could be due to a lack of materiality of the information for one of the reports, or insufficient understanding of the linkage between the two reports.

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3.3.2.4 Level 4: Unrelated disclosures in both the FR and the ER

In this case, information on an indicator was disclosed in the FR and the ER, but the information disclosed in the respective reports addressed different unrelated aspects of the indicator, or one of the two reports only contained a general reference to the topic, whereas the other report contained subject specific information. For example (in respect of general cross-referencing), the ER referred to the FR in connection with an overview of market opportunities linked to climate change, whilst the FR referred to the ER in connection with corporate governance. Another example of such type of disclosure could be where the FR referred in very broad terms or in passing to stricter legislation without providing any details or indications of the implications thereof, whilst the ER contained a detailed discussion of various pieces of environmental legislation.

3.3.2.5 Level 5: Disclosure in one report was a summary of disclosure in the other report

In this case, information on an indicator was disclosed in the FR and the ER, but the disclosure in one report was a (partial) summary of information in the other report. For example, the FR contained detailed information on the provision for rehabilitation, whilst the ER contained a summary of the same information. This is the first level that could be considered an indication of integration of disclosures between the FR and the ER.

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3.3.2.6 Level 6: Complementary information was disclosed

In this case, the information on a specific indicator disclosed in one report complements the information on the same indicator in the other report. For example, the FR described the basic structure of the Safety, Health and Environment (SHE) board committee including its composition, whilst the ER provides information on its roles and responsibilities.

3.3.2.7 Level 7: Same disclosures in both reports

In this case, the same information on an indicator is disclosed in both reports. For example, both the ER and the FR report that the company incurred no fines for non-compliance.

The levels of integration can be summarised as follows:

- Level 1: No disclosure of an indicator.
- Level 2: Conflicting disclosures in both reports.
- Level 3: Disclosure in only one report.
- Level 4: Unrelated disclosures in both reports.
- Level 5: Related/summarised disclosures in both reports.
- Level 6: Complementary disclosures in both reports.
- Level 7: Same disclosures in both reports.

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On completion of the analysis of the company EDIs, a comparative analysis was done between the six companies for each indicator category to determine similarities, differences and trends. Thereafter, a detailed comparative analysis was done for each environmental disclosure indicator individually to determine similarities, dissimilarities and trends.

It must be noted that this assessment does not address the completeness or quality of the disclosed information. An inclusive approach was followed and even scanty information was noted as relevant to the specific indicator. A good indication of integrated reporting identified in the analysis of the disclosures, does, therefore, not necessarily indicate good quality reporting.

3.4 Selection

The selection process involved two steps:

- Sector selection.
- Sample selection.

3.4.1 Sector selection

Taking into consideration the purpose of this assessment, a sector that has well-developed systems of environmental reporting should be selected, as one could expect such a sector to display more examples of good reporting practice than a sector that has a poor track record in environmental reporting. Sectors that represent industries with a considerable environmental impact

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can be expected to have a longer track record in environmental reporting than sectors with minimal environmental impact (De Villiers & Lubbe 2001). In South Africa, the mining sector is one of the sectors with the highest levels of potential environmental impact. This sector also has a long history of environmental reporting. South African mining houses fared consistently better than the top 100 industrial companies in a series of analyses of environmental disclosures over the period 1994-2002 (De Villiers & Du Toit 2004). Therefore, the mining sector was chosen as the most suitable sector for this study. In March 2008, the mining sector consisted of the diamond and gems sub-sector (six companies), the gold mine sub-sector (12 companies), the platinum mine sub-sector (nine companies) and the general mining sub-sector (17 companies).[6]

3.4.2 Sample selection

De Villiers (1999a), using the interview method to determine reasons for management to disclose environmental information, selected six companies known for good environmental disclosures. Three of them were the highest-rated companies in the KPMG/University Awards for Best Environmental Disclosure in Annual Reports and the WWF(SA) Awards for Best Disclosure in Environmental Reports. In a separate study, De Villiers (1999b) selected the ten companies with the highest market capitalisation in the industrial holdings sector on the JSE to analyse changes in environmental and other social reporting between 1982 and 1997. Griffith (2002) selected 56 of the 100

[6] Listings and market capitalisation figures are based on FinWeek of 20 March 2008

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largest (by market capitalisation) companies for his testing of legitimacy theory in corporate social reporting in South Africa. His selection approach was based on Gray et al.'s (1996, as cited by Griffith 2002) argument that larger companies tend to provide better examples of corporate social reporting than smaller ones.

A survey of the web based international repository of SRs (the Corporate Register database)[7] brought to light that most (five out of nine) platinum mining companies had their SRs incorporated in this database, followed by gold mining companies (three out of 12) and general mining companies (three out of 17). No SRs of companies in the diamond sub-sector could be found in the database.

In view of the above, it was decided to include the two largest companies in each of the platinum, gold and general mining sub-sectors, respectively, for which SRs could be found in the Corporate Register database, in this study. They were the following:

- Platinum sub-sector: Anglo Platinum and Impala Platinum.
- Gold sub-sector: Anglo Gold Ashanti and Gold Fields.
- General mining sub-sector: Anglo American and BHP Billiton.

In the 2006 Ernst and Young Excellence in South African Sustainability Reports Awards, two of the selected companies were ranked among the top

[7] www.corporateregister.com

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five companies, three among the 'excellent' and one among the 'good' companies (Ernst & Young 2006). Both the size and the track records of the selected companies in terms of sustainability reporting, therefore, confirm the argument that large companies with good track records will provide the type of information required for this study.

The 2007 (or 2007/08 in the case of Gold Fields) ARs and SRs of the sample companies were used for this study. Gold Fields published a single AR including a large section on sustainability issues. The other five companies published separate ARs and SRs.

3.5 Conclusion

This chapter described the identification of environmental disclosure indicators to be used as criteria for the assessment of the relationship between FRs and ERs. It further describes the content analysis approach used to assess the relationship between the FR and the ER of the selected companies. This lays the foundation for the actual analysis of these reports and the discussion of the results obtained in the following chapter.

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CHAPTER 4: RESULTS

4.1 Introduction

This chapter will discuss the results of the study in detail. This chapter is organised as follows.

- In section 4.2, an overall discussion of the results is provided.
- In section 4.3, the results are discussed in more details per category of environmental disclosure indicators.
- In section 4.4, the results are discussed per company.
- In section 4.5, the results of a sensitivity analysis to test for the effect of non-reported disclosure indicators are discussed.
- In section 4.6, an integrative discussion of the results follows.
- In section 4.7, an overall conclusion based on the results of the study is drawn.

4.2 Overall results

The assessment of the individual reports is summarised in Annexure 3. For each environmental disclosure indicator, the relevant information that was disclosed by each company in its FR and ER is described briefly in the 2nd and the 4th columns, respectively. Any specific referencing between the FR and the ER is described in the 6th column.

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Table 1 (page 146) provides a numerical analysis of the disclosures. The numbers in the columns titled 1 through 7 indicate the number of companies that disclosed information at the various levels of integration of each indicator. The various levels of integration used in this study are discussed in more detail in section 3.3. Levels 5, 6 or 7 can be regarded as increasing signs of integration in reporting as they indicate some level of linking relevant information in the FR with the ER, or vice versa.

The mathematical average of the scores was calculated for each indicator. An average score of 3.00 indicates that information on a selected environmental disclosure indicator was disclosed in at least the FR or the ER. An average score of more than 4.00 confirms that some form of integration between environmental and financial reporting was found. Similarly, average scores were calculated for each category of disclosure indicators. Finally, the indicators were ranked, based on the average scores, with the ranking of 1 indicating the indicator for which the highest level of integration was found.

The average score for all indicators combined was 2.46, indicating that, on average, the selected environmental disclosure indicators were not even reported in either of the two reports.

For ten indicators no information was disclosed at all. These include:

- No 7 Environmental-related equipment (capital and depreciation).
- No 9 Environmental-related costs for bringing property, plant and equipment (PP&E) into operation included in its carrying amount.

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- No 10 Land partially depreciated due to rehabilitation costs included in its carrying amount.
- No 26 Risk of material misstatement of financial statements due to environmental matters.
- No 27 Management representations to auditor regarding environmental issues.
- No 28 Use of environmental audits by auditor.
- No 29 Use of external environmental expert by auditor.
- No 30 Reconciliation of environmental information with relevant financial data.
- No 41 The implications of environmental performance and management as trade barrier.
- No 44 Finding unknown graves or other heritage objects during development work, and the financial implications thereof.

Possible reasons for the lack of disclosure of these indicators could be that the topic of the indicator was not relevant to the company, that the information was not sufficiently material to justify separate disclosure or that the company neglected to report on the matter. These aspects are discussed in more detail in the relevant categories in section 4.2. If these ten indicators were to be ignored for the analysis in Table 1, the overall score would be 2.86, which is still below the level of 3 as a minimum indication of reporting in either the FR or the ER.

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The highest scores for individual indicators, which would indicate a higher level of integrated reporting, were as follows (starting with the highest ranking):

- 1 – No 20 Other environmental risks and opportunities for the organisation (score of 5.33).
- 2 – No 19 Financial implications and other risks and opportunities for the organisation's activities due to climate change (5.00).
- 3/4 – No 2 Financial provision/liabilities for rehabilitation after exploration or at mine closure, and changes therein (4.83).
- 3/4 – No 14 Environmental-related fines and their tax effect (4.83).
- 5 – No 21 Governance mechanisms to identify, prioritise and manage strategic environmental risks and opportunities (4.33).
- 6 – No 34 Conservation and efficiency improvement initiatives to reduce energy consumption, reductions achieved, and resulting financial savings and other impacts on the organisation (4.00).
- 7 – No 18 Statement by chief executive officer (CEO)/chair about the relevance of sustainability/environmental issues to the organisation and its strategy (3.83).
- 8/9 – No 15 Other environmentally-related non-compliance issues, non-monetary sanctions and their implications (3.67).
- 8/9 – No 22 Targets to address strategic environmental issues, and performance against these targets (3.67).

The level of integration for the different indicator categories was as follows (in descending order):

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- Score 3.83 – Strategic management.
- Score 3.50 – General cross-referencing.
- Score 3.27 – Compliance.
- Score 2.17 – Assets and liabilities.
- Score 2.13 – Operational management.
- Score 1.00 – Audit.

It is positive that the category Strategic Management had the highest score regarding integration, as integration of managing environmental issues with core business should be driven by the strategic management process.

4.3 Results per category of environmental disclosure indicators

4.3.1 Direct cross-referencing between the FR and the ER

In each of the six FRs specific reference was made to the associated ER. This was often done in the CEO/chair statements. In most cases such reference was a general reference to the SR. Only in one case the reference was linked to environmental issues where the reader was referred to the SR for more information on environmental performance. Only three of the six ERs cross-referred to the FR. This included one general reference. The other two cross-references were related to a detailed market review of the opportunities linked to climate change, and more details on relevant governance structures.

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In general, the lack of or general nature of cross-referencing between the two reports seems to indicate insufficient understanding of the linkages between the two reports, especially in respect of using such cross-references to assist users of the report in accessing more detailed information.

4.3.2 Assets and liabilities

Information on provisions for rehabilitation liabilities (indicator no 2) was well covered, with most of the details in the FR. Most of the ERs also contained summarised or complementary information, indicating a high level of integrated reporting. Detailed information on ore reserves and valuation (indicator no 6) was found in all FRs but not in any ER.

Most of the information on the indicators in the category Assets and Liabilities was disclosed in the FR, with some associated disclosure in the ER for closure rehabilitation (indicator no 2), interest in rehabilitation funds (indicator no 3), cost-benefit analyses (indicator no 8) and carbon credits (indicator no 12). In some cases information was only disclosed in the ER, for example, for concurrent rehabilitation (indicator no 4), cost-benefit analyses (indicator no 8) and carbon credits (indicator no 12).

The complete absence of information on indicators no 7 (environmental-related equipment), no 9 (environmental-related costs for bringing PP&E into operation) and no 10 (partial depreciation of land due to rehabilitation costs) could perhaps be attributed to the fact that the amounts involved are not

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material and, therefore, not reflected separately in the financial statements. Alternatively companies could regard this as an integral part of their accounting processes and not worth mentioning separately. This may be the case for the FR, but the same cannot be argued for the ER. Keeping in mind the interests of the users of ERs, one would have expected to see information on these indicators in the ERs.

Generally speaking, the lack of information in the ER on most of the indicators in this category points to insufficient appreciation of its importance for the users of the ER, whilst the absence of such information in several of the FRs indicates that the business implications of the indicators at stake are not fully understood.

4.3.3 Compliance

Compliance-related disclosure showed a higher than average degree of integration, especially for fines (indicator no 14), other non-compliance issues (indicator no 15) and spills (indicator no 16). However, in most cases information was still only disclosed in one of the two reports with no linkage, or not at all. Only in the case of fines and spills was information disclosed in both reports by half of the companies. Reporting of compliance-related information varied between the FR and the ER: information on legislation (indicator no 13) was disclosed more in the FR, whilst information on fines (indicator no 14), other non-compliance issues (indicator no 15), spills (indicator no 16) and other emergency incidents (indicator no 17) was

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disclosed more in ERs. Generally speaking, information on compliance-related indicators was disclosed more in the ER than in the FR, but the companies did not do this consistently.

4.3.4 Strategic management

Strategic management disclosures showed the highest degree of integration of all categories with five of its eight indicators being among the top nine indicators in terms of integrated reporting, that is, other environmental risks and opportunities (indicator no 20), financial risks and opportunities due to climate change (indicator no 19), governance mechanisms (indicator no 21), CEO statements about the relevance of sustainability/environmental issues (indicator no 18) and targets and performance (indicator no 22). However, even in this category more than half the companies reported information in both reports on only two indicators, namely financial implications and risks and opportunities due to climate change (indicator no 19) and other risks and opportunities (indicator no 20). Most companies reported information in only one report or not at all. The only indicator on which information was disclosed in both reports by all companies was other environmental risks and opportunities (indicator no 20.

Although a higher degree of integrated reporting was shown for indicators in the category Strategic Management, it was on average still not even at the level of unrelated disclosures (level 4). There was no consistency as far as where the information on indicators in this category was reported. In cases

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where information was reported in only one report, more companies tended to report information on the CEO statement on the relevance of sustainability/environmental issues (indicator no 18) in the FR whilst information on governance mechanisms (indicator no 21), environmental targets and performance (indicator no 22), environmental-related stakeholders (indicator no 23) and integration of environmental issues with core business (indicator no 25) was reported more in the ER. Overall, information on indicators in this category tended to be reported more in the ER than in the FR.

4.3.5 Audit

No information was disclosed on any of the indicators in the category Audit. This may be ascribed to a lack of materiality or to the concise nature of audit reports. However, the fact that *IAPS 1010* (IAASB 1998) was published seems to indicate that the audit profession lends some importance to this issue. The current lack of disclosure of this aspect does not allow the user of the FR (where one would expect such information, as *IAPS 1010* applies to the financial audit) to assess whether environmental aspects were taken into consideration during the audit.

4.3.6 Operational management

Apart from the total lack of disclosure of audit-related indicators, the category Operational Management showed the lowest level of integrated reporting.

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None of the companies disclosed any information on two indicators, namely the implication of environmental performance as a trade barrier (indicator no 41) and finding graves during development work (indicator no 44). Whilst the latter may be ascribed to a lack of materiality, the same cannot be argued for the former. A level of integration was observed for only five indicators, any level of integrated reporting was observed, namely pollution prevention costs (indicator no 32), energy use and conservation (indicator no 34), other eco-efficiency initiatives (indicator no 35), market differentiation (indicator no 40) and biodiversity plans (indicator no 45). In every one of these cases only one company showed any form of integration. Energy use and conservation (indicator no 34) and other eco-efficiency initiatives (indicator no 35) were the two indicators in this category for which the highest level of integration was found. The high level of integration of energy use and conservation can be linked to the energy supply crisis that was experienced by the mining sector during the period covered by the reports. That crisis highlighted the business implications of energy supply and usage.

There was no consistency in whether information on these indicators was disclosed in the FR or the ER. Most companies disclosed information on most of the indicators in this category in the ER rather than in the FR. Equal disclosure in the FR and the ER was found for energy use and conservation (indicator no 34), water use (indicator no 37), resource-efficient products (indicator no 39), competitive advantage (indicator no 40), environmental indices (indicator no 42) and any other environmental issues (indicator no 46).

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Only information on pollution prevention costs (indicator no 32) was disclosed in more FRs than ERs.

4.4 Results per company

The number of environmental disclosure indicators for each company for which disclosed information falls in the various levels of integration is summarised in Table 2 (page 149). AngloGold Ashanti displayed the 'highest level of integrated reporting' in respect of the selected environmental disclosure indicators (average score of 2.63), although its score still indicates a lack of integration. Anglo Platinum showed the lowest level of integration (2.26), with Gold Fields second lowest (2.30). The high level of non-disclosure by all companies is noteworthy, ranging from 17 to 25 indicators out of 46 (37%-54%) on which individual companies did not disclose any information. As discussed above, this may be due to the indicator not being applicable to the company, it not being material enough to justify separate disclosure or to companies neglecting to report on the issue. Even if the ten indicators on which none of the companies disclosed any information are ignored, the remaining level of non-disclosure is still high, ranging from 7 to 15 indicators out of 36 (22%-42%). This implies that individual companies did not disclose information on between 22% and 42% of the indicators on which one or more of the other companies did disclose information. In view of the fact that the companies whose reports were assessed belong to the same industry sector, the significant difference in levels of reporting on individual indicators is surprising.

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With three of the six companies (one in each sub-sector – gold, platinum and general) coming from the Anglo American stall, it could be argued that this could lead to a bias in the results. The average score for the three Anglo-related companies was 2.48, compared to 2.45 for the non-Anglo-related companies, a negligible difference. In the gold subsector the Anglo-related company scored higher than the non-Anglo-related company. In the platinum subsector the situation was the reverse. In the general subsector both companies achieved the same score.

Another difference between the assessed companies was that Gold Fields published a single report including the AR and a chapter on SD, whereas the other five companies published separate ARs and SRs. The low score achieved by Gold Fields confirms that publishing one report does not necessarily improve integrated reporting.

4.5 Sensitivity analysis of non-reported disclosure indicators

It was a matter of concern that the high number of instances in which one or more companies did not report any information on the indicators could skew the results. Therefore, a sensitivity analysis was performed to assess the impact of this situation. For the purpose of the sensitivity analysis, it was conservatively assumed that where a company did not report any information on an indicator, that that indicator was not applicable to the company or that such information was not material enough to be reported separately. The

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scores in columns 1 and 2 in Table 1 were, therefore, ignored for the purpose of the sensitivity analysis. The results of the sensitivity analysis are shown in Table 3 (page 150). The impact of the sensitivity analysis on the results can be summarised as follows:

- The overall average score per indicator showed a slightly positive degree of integrated reporting (4.08), compared with a lack of integration in the pre-sensitivity analysis scenario (2.46).
- The rankings of the indicator categories were slightly affected. The categories Compliance and Operational Management increased by one point whilst the categories Cross-referencing and Assets and Liabilities decreased by one point. The category Strategic Management maintained the highest ranking.
- For nine of the indicators a degree of integration in reporting was shown, compared to only four had the sensitivity analysis not been performed.
- The rankings of individual indicators were affected significantly. Indicators on which only one or two companies reported information increased meaningfully in ranking, whilst indicators on which five or six companies disclosed information decreased in ranking.

Whilst most of these effects were to be expected mathematically, it resulted in those indicators on which less information had been disclosed being favoured by the sensitivity analysis. The highest score for integration was achieved by indicator no 40 on which only one company reported some information.

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The actual level of integration probably lies somewhere between the main results and the results of the sensitivity analysis. However, with the information available the actual level of integration cannot be quantified. However, it should be noted that even after following the conservative approach in the sensitivity analysis, the general tenor of the sensitivity analysis confirmed the inferences drawn from the main analysis.

4.6 Integrative discussion

The general finding of this study is that there was very limited linkage or integration between the FR and the ER of the selected mining companies. On average, nearly half of the environmental disclosure indicators were not reported on at all by any one of the companies. Another 35% of the information was only disclosed in the FR or the ER with no indications of any linkage or integration. Approximately 10% of disclosures showed any form of active integration between the FR and the ER. The overall level of integration score was 2.46, indicating that, on average, not even the basic level of reporting information in either the FR or the ER was achieved. True integration levels start from 5 upwards. For ten of the selected indicators, no information was disclosed by any company.

The highest (albeit still very low) levels of active linkage or integration were observed for indicators in the categories Strategic Management (3.83), General Cross-referencing (3.50) and Compliance (3.27). Indicators in the category Audit scored the lowest possible level of integration (1.00) as no

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information on any of these indicators was disclosed by any company. Disclosure of information on indicators in the categories Operational Management (2.13) and Assets and Liabilities (2.17) showed the lowest levels of integration.

For individual indicators, information disclosed on other environmental risks and opportunities (indicator no 20, score 5.33), risks and opportunities related to climate change (indicator no 19, score 5.00), provisions for rehabilitation liabilities (indicator no 2, score 4.83) and environmental-related fines (indicator no 14, score 4.83) and environmental-related governance mechanisms (indicator no 21, score 4.33) showed the highest level of integration, followed by energy use and conservation (indicator no 34, score 4.00) and CEO/chair statements about the relevance of sustainability/environmental issues (indicator no 18, score 3.83). The highest score for non-climate-change-related risks and opportunities (indicator no 20) was surprising. The high score for risks and opportunities related to climate change (indicator no 19) can be associated with the high level of awareness of climate change and its implications for business. Provisions for rehabilitation liabilities (indicator no 2) is a sector-specific major issue for mining companies and could be expected to receive a high profile among users of the FR as well as users of the ER. Energy usage and efficiency initiatives (indicator 34) were highlighted owing to the energy shortages experienced in South Africa during the period of reporting, and it would have been surprising if this issue did not receive equal attention in the FR and the ER. Lastly, the high scores for environmental-related governance

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mechanisms (indicator no 21) and CEO/chair statements about the relevance of sustainability/environmental issues (indicator no 18) are encouraging as this is where integration of environmental issues in the core business should start.

The general trend observed in this study confirms the contention by previous researchers that information disclosed in either ARs or SRs is often not useful for intended users, especially if it comes to information regarding business implications of environmental issues (Niskala & Pretes 1995; Deegan & Rankins 1999; De Villiers 1999b; De Villiers 2000; PLEON 2005; Stainbank & Peebles 2006; Jupe 2007; Campbell & Slack 2008; Eccles & Krzus 2010; Kuruppu & Milne 2010; Kaenzig et al. 2011).

When the results of this study are measured against the expectations of users as confirmed by scientific research, the outcome is variable. Some of the aspects that previous researchers (Deegan & Rankin 1999; Thompson & Cowton 2004; Rogers 2005) found to be important for report users, achieved relatively higher levels of integration (namely rehabilitation liabilities, energy usage, fines, targets and performance) whilst others did not fare well (other environmental contingent liabilities, environmental capital expenditure, cost of environmental programmes and compliance, legal compliance *per se*, clean-up costs, the impact of environmental expenditure on future performance, environmental impairment of assets, environmental assets and capitalisation of environmental costs).

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The fact that the company which published one 'integrated' report achieved the second lowest level of integration, confirms the notion in the King III Report that "integrated reporting should be focused on substance over form". (IOD 2009:109).

Of the companies whose reports were assessed, AngloGold Ashanti achieved the highest integration score whilst Anglo Platinum achieved the lowest integration score. However, the difference between the companies that were assessed was not significant and the integration score of all six companies was still very low.

4.7 Conclusion

The general conclusion of the results is that even companies that are highly regarded in respect of sustainability reporting are not yet very successful when it comes to actively linking disclosure in their FRs and ERs, and thereby integrating the financial and environmental reporting processes. South African companies still have to learn more about truly integrated reporting and the development of guidelines in this regard is long overdue. The lack of integrated reporting might well be due to a lack of sufficient understanding of the business implications of environmental issues, and the inability to translate these implications into financial terms.

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CHAPTER 5: CONCLUSION

5.1 Introduction

This chapter will provide an overall reflection on how the research problem was addressed in the study, the research methodology and design used, and the results obtained, followed by a more detailed discussion of the contributions by the study and the limitations of the study. The chapter will be closed by some recommendations for further study.

This chapter is organised as follows:

- In section 5.2, an overall reflection on the research problem, the research methodology and design as well as the results obtained will be provided.
- In section 5.3, the contributions of this study are discussed.
- In section 5.4, the (potential) limitations of this study are discussed.
- In section 5.5, some recommendations for future research are made.

5.2 Overall reflection on the research problem, research methodology and design, and the results obtained

The purpose of this study was to assess the current status of the relationship between environmental reporting and financial reporting by South African listed mining companies. This was investigated by identifying suitable

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environmental disclosure criteria relevant to this relationship, and by analysing the ERs and FRs of the six largest listed South African mining companies using a content analysis approach based on these criteria. The study found that generally speaking, there is very limited active linkage of between ERs and FRs. This leads one to conclude that the processes of environmental reporting and financial reporting are not yet effectively integrated.

5.3 Contributions of this study

The main contributions of this study were, firstly, the development of an EDI incorporating environmental disclosure indicators relating to the relationship between FRs and ERs from a variety of sources and, secondly, using this EDI to assess this relationship. Such a comparative assessment of environmental disclosures in FRs and ERs has not yet been published previously and must be considered a contribution. This may form a building block for the development of criteria and tools for measuring the extent and quality of integrated reporting.

5.4 (Potential) limitations of this study

The same identification of environmental disclosure indicators relating to the relationship between the ER and the FR was also a limitation to the study. With no generally agreed upon list of such indicators, indicators had to be extracted from a variety of sources without having been tested or validated for applicability. The fact that none of the companies disclosed any information

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on ten of the 46 identified disclosure indicators casts some doubt on the applicability of these specific indicators as disclosure criteria.

Another limitation of the study was that the assessment did not take the completeness or quality of the disclosures into account. Therefore, the actual degree of integration is probably lower than that indicated by this study.

The small sample size of six companies might be construed as a limitation of the study. However, the results indicated that the levels of active linkage and integration between FRs and ERs are very low, even in companies that are regarded as leaders in sustainability reporting.

The high number of cases in which one or more companies (or even all the companies) did not disclose information on an environmental disclosure indicator, was significant. The information available and the design of this study did not allow for the analysis of the possible reasons for such non-disclosure.

The inclusion of three companies from the Anglo American stall could have skewed the results. However, the discussion in section 4.3 indicates that this was not the case.

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5.5 Recommendations for further study

A number of recommendations for further study are proffered to assist with the development of firmer guidance on the integration of reporting on environmental issues in business context.

- Environmental disclosure indicators in respect of the relationship between financial and environmental reporting should be investigated in greater detail to determine which indicators are relevant and should be incorporated in future studies on this relationship.

- The reasons for non-reporting of environmental disclosure indicators and the effect thereof on the assessment of the degree of integration between the FR and the ER should be investigated further.

- The levels of integration require further investigation.

- Further research should lead to the development of a more standardised tool for the assessment of the relationship between financial and environmental reporting.

- Indicators should be identified and developed for assessing the completeness and quality of information disclosed on the business implications of environmental issues.

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SOUTH AFRICAN LEGISLATION

Companies Act, No 61 of 1973, as amended.

Companies Act, No 71 of 2008.

Conservation of Agricultural Resources Act, No 43 of 1983, as amended.

Corporate Laws Amendment Act, No 24 of 2006.

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Environmental Conservation Act, No 73 of 1989, as amended.

Minerals and Petroleum Resources Development Act, No 28 of 2002, as amended.

National Environmental Management Act, No 107 of 1998, as amended.

National Environmental Management: Air Quality Act, No 39 of 2004.

National Environmental Management: Biodiversity Act, No 10 of 2004.

National Environmental Management: Protected Areas Act, No 57 of 2003, as amended.

National Heritage Resources Act, No 25 of 1999, as amended.

National Water Act, No 36 of 1998, as amended.

Proclamation No 47 of 2007: Commencement of the Corporate Laws Amendment Act, 2006 (Act No 24 of 2006).

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ANNEXURE 1: IDENTIFICATION OF ENVIRONMENTAL DISCLOSURE INDICATORS

1. Overview

This annexure provides details of the review of South African legislation, accounting standards and BPGs in respect of environmental disclosure indicators with a focus on the business implications of environmental issues. It first looks at South African legal requirements for environmental reporting (section 2). This is followed by an overview of accounting requirements for environmental reporting (section 3). A selected number of BPGs as well as relevant literature were perused to identify environmental disclosure indicators for use in this study (section 4), over and above legal and accounting requirements.

2. South African legal requirements in respect of environmental reporting

Legal requirements in respect of environmental reporting or reporting on the business implications of environmental matters can be expected to originate from two main sources:

- Business-related legislation that requires the disclosure of business-related information that may be of environmental relevance (section 2.1).

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- Environment-related legislation that requires certain environment-related information to be disclosed (section 2.2).

2.1 Business-related legislation

2.1.1 Companies Act

The Companies Act, No 61 of 1973, as amended, regulated how companies operate and, more importantly for this study, how they report[8]. The Corporate Laws Amendment Act, No 24 of 2006, which was enacted on 12 November 2007, made some significant changes as far as reporting requirements are concerned.

The Companies Act, No 61 of 1973 and section 37 of the Corporate Laws Amendment Act, No 24 of 2006 required companies to publish directors' reports as part of their financial statements. The requirements relevant to this study for what should be included in the directors' report are "every fact or circumstance material to the appreciation of the state of affairs and financial position of the company by its members", "any material fact or circumstance, which has occurred between the accounting date and the date of the report", and "any matter not prescribed by this Schedule but which is material for the appreciation of the state of affairs of the company and its subsidiaries"

[8] The Companies Act, No 61 of 1973 was replaced by the Companies Act, No 71 of 2008, which was published on 9 April 2009. At that time, the reports to be assessed had already been selected and the assessment had started. The requirements of the 1973 Companies Act and the 2006 Corporate Laws Amendment Act were prevalent at the time of study and assessment. Any new requirements of the 2008 Companies Act could only have affected ARs and SRs published in or after 2010. Therefore, the requirements of the 1973 Companies Act are discussed in detail.

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(sections 67(1), 67(2) and 66(2), respectively, of Schedule 4 to the Companies Act, No 61 of 1973).

The crux of these requirements for the directors' report revolves around the concept of materiality. The newly inserted section 4(vA) of Schedule 4 to the Companies Act, No 61 of 1973 defines a material item as "any information relating to a company that, either by itself or in conjunction with other information, is of such an extent that it could influence the economic decisions of users of the company's financial statements".

Section 30(3)(b)(i) of the new Companies Act, No 71 of 2008 is much less prescriptive regarding the content of directors' reports. It has done away with Schedule 4. It requires that the directors' reports include any matter that is material to the shareholders to appreciate the company's affairs.

The 2006 amendment of the Companies Act by the Corporate Laws Amendment Act, No 24 of 2006 signified an important specification in respect of reporting standards that had to be followed in financial reporting in South Africa. Prior to 2007, financial statements were required to comply with generally accepted accounting practices (GAAP) (section 286(3) of 1973 Companies Act before the 2006 amendment), which were, however, not defined. The 2006 amendment changed the vague reference to GAAP to a specific reference to financial reporting standards. Every widely held

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company[9] must comply with financial reporting standards, which are to be issued by the Financial Reporting Standards Board (FRSB), and which must be in accordance with the IFRSs of the IASB or its successor body (newly inserted sections 285A, 440S(1)(a) and 440S(2), respectively, of the 1973 Companies Act). Therefore, widely held companies in South Africa are legally required to comply with the IFRSs. The implications of IFRSs for environmental reporting will be discussed in section 3.

2.1.2 Minerals and Petroleum Resource Development Act

Sections 41(1) and (3) of the Minerals and Petroleum Resource Development Act (MPRDA), No 28 of 2002, require that holders of prospecting and mining rights or mining permits make financial provision for the rehabilitation or management of negative environmental impacts. They must assess their environmental liability annually and increase their provision accordingly. The MPRDA does not specifically require reporting on this provision, probably because the main focus of this clause is to ensure that funds are available for rehabilitation, not so much the public reporting thereof. However, accounting reporting requirements (see section 3) require the reporting thereof in the financial statements.

[9] A widely held company is defined as a company that has no restriction on the transfer of its shares and is permitted to offer shares to the public. It can broadly be equated with a public company under the old Act. All listed companies, the subject of this investigation, are by nature widely held companies.

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2.1.3 Summary: Reporting requirements by business legislation

The Companies Act, No 61 of 1973 as amended, requires compliance with IFRSs, as well as the disclosure in the directors' reports of any matter that is material to the users of financial statements. Although no specific mention is made of environmental matters as such, they would have to be reported if it were required by any IFRS or if it were deemed to be material to the users of financial reports. The prescribed provision for rehabilitation costs in the MPRDA is the only specific South African legal requirement for accounting for and reporting on (by implication) environmental liabilities.

2.2 Environment-related legislation

Environmental legislation in South Africa covers a wide variety of acts. The most important ones, which could possibly be expected to contain some reporting requirements, include the following[10]:

- Conservation of Agricultural Resources Act, No 43 of 1983[11].
- Environmental Conservation Act, No 73 of 1989[12].
- National Water Act (NWA), No 36 of 1998.
- National Environmental Management Act, No 107 of 1998.
- National Heritage Resources Act (NHRA), No 25 of 1999.

[10] Note that only legislation that was prevalent during the period covered by the reports assessed in this study is included in this discussion.
[11] This Act was analysed but no reporting requirements were identified.
[12] This Act was analysed but no reporting requirements were identified.

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- Minerals and Petroleum Resources Development Act (MPRDA), No 28 of 2002.
- National Environmental Management: Protected Areas Act, No 57 of 2003[13].
- National Environmental Management: Biodiversity Act (NEM:BA), No 10 of 2004.
- National Environmental Management: Air Quality Act (NEM:AQA), No 39 of 2004.

Careful analysis of these acts reveals three types of reporting requirements:

- Requirements relating to immediate reporting of specific incidents to the authorities and/or other affected stakeholders.

- Requirements relating to regular reporting of specified information to the authorities.

- Requirements relating to regular reporting of specified information by authorities to higher authorities.

Reporting by one authority (for example, the Minister) to a higher authority (for example, parliament) – the third bullet above –, which constitutes an internal reporting requirement within government structures, falls outside the scope of this study which focuses on reporting by public entities to public stakeholders.

[13] This Act was analysed but no reporting requirements were identified.

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For the same reason, reporting of environment-related information by users or landowners to authorities – referred to in the first two bullets above – also falls outside the scope of public environmental reporting. The submission of certain information or reports as part of an authorisation application process, for example, an environmental impact assessment report required during the application for an environmental authorisation, is also not considered a reporting requirement for purposes of this study as such information primarily forms part of an administrative process between the authority and the specific developer. The situation described above seems to indicate that environmental legislation in South Africa does not require any public environmental reporting except for incident reporting to affected stakeholders – referred to in the first bullet above.

However, the requirement to report certain information to the authorities (referred to in the second bullet above) could be taken as a guideline for public environmental reporting. If the authorities deem it important that such information be reported to them, it might serve as a representation of what could be considered important for the public to know. What follows is a brief overview of the requirements for immediate reporting of incident information and the regular reporting of specified information by public entities or individuals to authorities.

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2.2.1 Incident reporting requirements

The following information must be reported to the authorities immediately following an incident:

- In the case of a pollution, fire or explosion incident the following information must be reported immediately to the Department of Environmental Affairs and Tourism (DEAT)[14], the SA Police Service (SAPS) and the relevant fire protection service, the relevant provincial authority and municipality, **as well as to all persons whose health may be affected by the incident** [my emphasis]:

    - "the nature of the incident;
    - the risk posed by the incident to public health, safety and property;
    - the toxicity of the substances released by the incident; and
    - any steps that should be taken to avoid or minimise the effects of the incident on public health or the environment" (section 30(3) of the National Environmental Management Act, No 107 of 1998).

[14] Owing to political changes, the names of government departments tend to change from time to time. To avoid confusion, the departmental names contained in the specific legislation have been retained in this discussion.

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- Within 14 days of the incident the following information must be reported to the DEAT, the relevant provincial department and the relevant municipality:
    - "the nature of the incident;
    - substances involved, the quantities thereof released, and the acute effects thereof on persons and the environment;
    - initial measures taken to minimise impacts;
    - causes of the incident; and
    - measures taken or to be taken to prevent a recurrence of such incident" (section 30(5) of the National Environmental Management Act, No 107 of 1998).

- If an air quality officer reasonably suspects that a person has on one or more occasions contravened or failed to comply with the NEM: AQA or any conditions of a licence issued under the Act, and that such contravention or failure has had, or may have, a detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage, or has contributed to the degradation of ambient air quality, such person may be required to submit an atmospheric impact report to an air quality officer (section 30 of the National Environmental Management: Air Quality Act, No 39 of 2004).

- The person responsible for or the owner or person in control of a substance involved in an incident in which such substance pollutes or

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has the potential to pollute a water resource or has, or is likely to have, a detrimental effect on a water resource, must as soon as reasonably possible after such incident report the incident to the Department of Water Affairs and Forestry (DWAF), the SAPS, the relevant fire department, or the relevant catchment management agency (section 20(3) of the National Water Act, No 36 of 1998).

- The owner or custodian of a heritage object that is protected in terms of the NHRA must report immediately to the South African Heritage Resources Agency (SAHRA) any loss of or damage to such object (section 32(16) of the National Heritage Resources Act, No 25 of 1999).

- Any person discovering archaeological or palaeontological objects during the course of development or agricultural activity must immediately report the find to the relevant heritage resources agency (section 35(3) of the National Heritage Resources Act, No 25 of 1999).

- Any person discovering a previously unknown grave during the course of development or agricultural activity must immediately report the grave to the relevant heritage resources agency (section 36(6) of the National Heritage Resources Act, No 25 of 1999).

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2.2.2 Regular reporting requirements

The following cases relate to requirements for reporting to the authorities on a regular basis:

- The Minister of Environmental Affairs and Tourism must prescribe the form in which measurements of ambient air quality and emissions must be reported and to which authority (section 12(c) of the National Environmental Management; Air Quality Act, No 39 of 2004).

- A responsible authority may require the monitoring of and reporting on water use as a condition for a general authorisation or water use licence (section 29(1)(b)(ii) of the National Water Act, No 36 of 1998).

- A person or institution that has been assigned the responsibility for the implementation of a biodiversity management plan, must report on the progress of the implementation of the plan (section 45(b) of the National Environmental Management: Biodiversity Act, No 10 of 2004).

- The Minister of Environmental Affairs and Tourism may require any person involved in monitoring the conservation status of components of biodiversity or trends affecting biodiversity to report regularly to the Minister on the results of such monitoring (Section 49(2) of the National Environmental Management: Biodiversity Act, No 10 of 2004).

- Holders of mining rights are required to submit ARs, which must, among other things, detail the extent of compliance with the MPRDA

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and the conditions of the mining rights (sections 25(2)(h) and 28(2) of the Mineral and Petroleum Resources Development Act, No 28 of 2002).

- Holders of prospecting or mining rights or mining permits must submit a regular performance assessment report to the Minister, which must among other things address compliance with the approved environmental management programme or plan, and the continued appropriateness and adequacy of the programme or plan (Regulation 55 under the Mineral and Petroleum Resources Development Act, No 28 of 2002).

From the above analysis it follows that only one piece of legislation requires the reporting of environment-related information to persons other than authorities: information regarding the possible impact of an environmental pollution, fire or explosion incident must be reported to persons who may be affected by the incident (Section 30(3) of the National Environmental Management Act, No 107 of 1998). This does not require reporting to the public in general.

If reporting requirements to authorities would be accepted as representative for reporting guidelines to the public in general, the following aspects should be considered for inclusion in annual environmental reporting based on legal requirements:

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- A summary of environmental incidents.
- A summary of losses of or damage to heritage resources.
- A summary of archaeological and palaeontological resources as well as graves discovered during development or agricultural activities.
- Information on ambient air quality and emissions.
- Information on water uses.
- Progress of the implementation of biodiversity management plans, if applicable.
- Information on monitoring of components of biodiversity, if applicable.

2.2.3 Summary: Reporting requirements of environmental legislation

South African environmental legislation does not contain specific requirements for public environmental reporting, except one instance where affected people must be informed about an incident. Requirements for the reporting of certain identified environmental information to authorities may indicate what would be important for the public to know, and subsequently serve as proxies for desirable public reporting on environmental issues.

2.3 Conclusion: South African legal requirements in respect of environmental reporting

South Africa does not have specific legal requirements governing public reporting of environmental information. However, compliance with the IFRSs is required. This may have indirect implications for environmental reporting

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(see section 3). In addition, any information (which could include environment-related information) that is material to the understanding of financial statements must be included in the directors' reports. Requirements for reporting certain environmental information to the authorities, including incident information and regular specified information may be considered as representative for guidance on what may be important for the public to know, and subsequently on what should be included in public environmental reporting.

3. Accounting requirements for environmental reporting

The IFRSs of the IASB and related documents contain a number of references to environmental aspects. Most of these references are in the form of examples to illustrate the meaning of the standard. Some references are more explicit whilst others are more implicit. Some references address measurement requirements whilst others address disclosure requirements. Few standards or related documents address environmental issues *per se*.

In addition, the IAASB has issued an IAPS on the consideration of environmental matters in the audit of financial statements.

The discussion of environment-related accounting requirements, with a focus on reporting requirements, in this section will be structured as follows:

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- In section 3.1 the interpretations of the IFRIC that address specific environment-related issues will be dealt with.
- In section 3.2 the IFRSs that are relevance to environmental reporting will be covered.
- In section 3.3 the IASs that are relevance to environmental reporting will be discussed.
- In 3.4 the audit practice statement on environmental considerations will be addressed.

3.1 Interpretations of the International Financial Reporting Interpretation Committee (IFRIC)

3.1.1 *IFRIC 1: Changes in existing decommissioning, restoration and similar liabilities (IASB 2004a)*

IFRIC 1 provides guidance on the accounting treatment of changes in existing liabilities in respect of decommissioning and restoration. Accounting for such changes is to be done in accordance with the costing or the revaluation model, whatever is used for that asset. If necessary, testing for impairment should take place. If, in the case of the revaluation model, the revaluation surplus is affected, this should be disclosed on the face of the income statement.

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3.1.2 *IFRIC 3: Emission rights (IASB 2004b)*

IFRIC 3 was released by the IFRIC in December 2004 but withdrawn by the IASB in June 2005 to allow for a wider assessment of the issues at stake. The document specifically addressed accounting for trading rights in emissions credits.

3.1.3 *IFRIC 5: Rights to interests arising from decommissioning, restoration and environmental rehabilitation funds (IASB 2004c)*

IFRIC 5 provides guidance on the accounting treatment of interests in rehabilitation funds. Specific disclosure requirements include the following:

- A contributor to an environmental rehabilitation fund should disclose the nature of its interest in the fund and any restrictions on access to the assets in the fund (par 11 of *IFRIC 5*).

- When a contributor has an obligation to make potential additional contributions (for example, in the case of insufficient funds in the fund) that are not recognised as a liability, it should make disclosures as required in paragraph 86 of *IAS 37*, that is contingent liability – nature, financial effect, uncertainties and possibility of reimbursement (par 12 of *IFRIC 5*).

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- When a contributor accounts for its interest in a fund in accordance with paragraph 9 of *IFRIC 5* (that is, as a reimbursement in the case when it does not have control, joint control or significant influence over the fund) it should make the disclosures required in paragraph 85(c) of *IAS 37*, namely amount of any expected reimbursement and the associated asset that has been recognised (par 13 of *IFRIC 5*).

3.2 International Financial Reporting Standards (IFRSs)

3.2.1 *IFRS 5: Non-current assets held for sale and discontinued operations (IASB 2004d)*

Adjustments to environmental obligations held by a seller might lead to adjustments in the current period to amounts previously presented in discontinued operations (par 35(b) of *IFRS 5*). Normally, assets that are classified as held for sale need to be sold within one year of such classification (par 8 of *IFRS 5*). If, after classifying an asset as held for sale, the need for remediation of environmental damage is identified and this delays the sale of property, it may cause it to be reclassified as held and used until remediation is completed (example 3 in Guidance on implementing *IFRS 5*). However, if, after a firm purchase agreement has been entered into, the entity has already initiated remediation actions and satisfactory rectification is highly probable, this may qualify for an exception to the rule that held-for-sale properties must be sold within one year (example 6 in Guidance on implementing *IFRS 5*).

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3.2.2 IASB Extractive Activities Project

In 1998, the IASB started a project (the Extractive Activities Project) to develop an IFRS to address all unique issues associated with accounting for the searching for, finding and extracting minerals. A major focus of the project is the financial reporting issues associated with reserves and resources. Recommendations for disclosure in the discussion paper on the project (IASB 2010a) that was published for comments in April 2010 include the following (pages 109-110 of discussion paper)[15]:

- Reserve quantities (proved and probable reserves, estimation method, main assumptions, sensitivity analysis and reconciliation of changes).
- Current value or fair value measurement of reserves, whichever is used (preparation basis, main assumptions, sensitivity analysis, and reconciliation of changes).
- Fair value measurement of reserves (if applicable).
- Production revenues.
- Exploration, development and extraction costs.

[15] Detailed guidance on each of these aspects or types of disclosure is provided in the discussion paper.

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3.3 International Accounting Standards (IASs)

3.3.1 *IAS 12: Income taxes (IASB 1998)*

In an example, *IAS 12* refers to fines for non-compliance in respect of sulphur emissions that might give rise to deferred tax differences because fines are not tax deductible. This should be disclosed in the reconciliation of the tax expense and the accounting profit (example 2 in Appendix B to *IAS 12*).

3.3.2 *IAS 16: Property, plant and equipment (IASB 2003c)*

IAS 16 contains various implications for environmental reporting.

Equipment that does not result in future economic benefits or inflows is normally not recognised as an asset. However, equipment that is required to comply with environmental regulations qualifies for recognition as assets, as this equipment is required to obtain future economic benefits from its other assets (paragraphs 7 and 11 of *IAS 16*, respectively).

The cost of an item of PP&E includes any costs directly attributable to bringing the asset to the location and condition necessary for it to be capable of operating in the manner intended by management, including site preparation costs and professional fees (paragraphs 16(b), 17(b) and 17(f) of *IAS 16*). This would include costs for environmental impact assessments as well as environmental mitigation costs during construction.

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The cost of an item of PP&E also includes the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located. This obligation arises either when the item is acquired or as a result of using the item during a particular period for purposes other than to produce inventories. This obligation also makes provision for costs that the entity did not face when the item was acquired but which came about during its use, for example, as a result of new environmental legislation (paragraph 16 (c) and BC 13-16 of *IAS 16*).

Normally land is not depreciated. However, if the cost of land includes the costs of site dismantling, removal and restoration, that portion of the cost of the land asset is depreciated over the period of benefits obtained by incurring those costs (paragraph 59 of *IAS 16*).

If the estimated cost of restoration changes after acquisition, the carrying amount is amended. Such change constitutes a change in accounting estimate and must be disclosed in the financial statements (paragraph 79 of *IAS 16*).

The cost of a self-constructed asset includes all direct costs. However, it excludes the cost of abnormal wastage of material incurred in the process of constructing the asset. Therefore, such costs are reflected as expenses and are not capitalised (paragraph 22 of *IAS 16*).

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3.3.3 *IAS 2: Inventories (IASB 2003b)*

The depreciation of assets used to produce inventories is included in the costs of inventories. By deduction, this includes the costs of restoration of the site on which an asset is located, which are related to the acquisition or dismantling of that asset (paragraph 12 of *IAS 2* and paraghraph 16(c) of *IAS 16*).

Abnormal amounts of materials wasted in the production process are not included in the cost of inventories and are to be recognised as expenses (paragraph 16(a) of *IAS 2*).

3.3.4 *IAS 37: Provisions, contingent liabilities and contingent assets (IASB 1999)*

IAS 37 is particularly relevant to environmental reporting by mining companies. It contains numerous environment-related examples.

This standard addresses future cash outflows of companies for clean-up/restoration costs associated with their activities. In the mining environment, this relates to rehabilitation requirements following exploration and extraction/mining activities. The company makes provision for present obligations for future costs that exist at the reporting date due to its activities in the past, which can be estimated reliably (paragraph 14 of *IAS 37*).

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Estimates of future costs for clean-up should be based on currently available technologies, including the more effective application of current technologies that may be expected to be available when the clean-up eventually has to take place. However, the company may not anticipate the development of new clean-up technologies in its estimate unless it is supported by sufficient objective evidence (paragraph 16(a) of *IAS 2*).

Several environment-related examples are provided to give guidance on the recognition of provisions and contingent liabilities in financial statements (examples 2A, 2B, 3, and 6 in Appendix C to *IAS 37*) as well as on the disclosure requirements (example 2 in Appendix D to *IAS 37*).

3.4 International Audit Practice Statements (IAPSs)

3.4.1 *IAPS 1010: The consideration of environmental matters in the audit of financial statements*

IAPS 1010 emphasises that environmental matters are becoming significant to more and more organisations. For some organisations, environmental matters are not significant. For others they are, however, significant. In that case, there may be a risk of material misstatement (including inadequate disclosure) in the financial statements relating to environmental matters. Therefore, the auditor needs to consider environmental matters in the audit of financial statements. *IAPS 1010* provides practical assistance to auditors in this respect (paragraphs 1-3 of *IAPS 1010*).

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IAPS 1010 gives advice on a wide range of environment-related aspects in the financial statements. For the purpose of this study, the following aspects are relevant:

- The risk of material misstatement of financial statements due to environmental matters (paragraphs 35-40 and Appendix 2 to *IAPS 1010*).
- Management representations to the auditor in respect of environmental issues (paragraph 48 of *IAPS 1010*).
- Disclosure of compliance with environmental laws (paragraphs 30-34 of *IAPS 1010*).
- Use of external expertise by auditors (paragraphs 41-44 of *IAPS 1010*).
- Use of environmental audits by auditors (paragraphs 45-46 of *IAPS 1010*).
- Reconciliation of environmental information with relevant financial data (paragraph 26 of *IAPS 1010*).

3.5 Summary of accounting requirements for environmental reporting

Based on international accounting and audit standards, disclosure of the following environment-related aspects is required or can be deduced if it satisfies the materiality criterion:

- Provisions/liabilities for rehabilitation after exploration or mine closure.

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- Interest in rehabilitation funds.
- Other environment-related provisions or contingent liabilities.
- Concurrent expenditure on rehabilitation.
- Environment-related equipment.
- Environment-related costs for bringing PP&E into operation included in its carrying amount.
- Land partially depreciated due to rehabilitation costs included in its carrying amount.
- Impairment of assets due to environmental factors.
- Accounting for carbon credits.
- Environment-related fines and their tax implications.
- Abnormal amounts of wasted materials during production processes.
- The risk of material misstatement of financial statements due to environmental matters.
- Management representations to the auditor in respect of environmental issues.
- Disclosure of compliance with environmental laws.
- Use of external environmental expertise by auditors.
- Use of environmental audits by auditors.
- Reconciliation of environmental information with relevant financial data.

4. Best practice guidance on environmental disclosure indicators

This section deals with a number of selected BPGs and relevant literature that were perused to identify environmental disclosure indicators to be used in this

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study in addition to those identified in South African legislation and accounting standards. This section is structured as follows:

- Section 4.1: Relevant scientific literature.
- Section 4.2: Guidance by the SAICA.
- Section 4.3: The GRI guidelines for sustainability reporting.
- Section 4.4: The SAMREC code for the reporting of exploration results, mineral resources and mineral reserves.
- Section 4.5: The King II Report on corporate governance in South Africa.
- Section 4.6: The JSE SRI Index.

4.1 Relevant scientific literature

In a study of nearly 500 of the largest Australian companies as well as nearly 500 users of ARs, Deegan and Rankin (1999) found significant differences between the expectations of preparers and users of ARs regarding the disclosure of environmental information, except in the mining sector, which may indicate a higher level of maturity of environmental reporting in this sector. Companies that prepared ARs indicated that the following environmental disclosures should be provided in quantitative or monetary form: environmental contingent liabilities, restoration and rehabilitation policies and environmental capital expenditure. Report users felt that the following environmental issues should be disclosed in quantitative terms: energy usage, environmental contingent liabilities, environmental capital expenditure and

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fines for breaches of environmental laws and/or regulations. The users of ARs indicated that environmental performance, cost of environmental programmes, environmental policies, and cost of environmental compliance were the most important aspects of environmental disclosures in the AR.

In a study on the use of environmental information by bankers, Thompson and Cowton (2004) found that the most important and statistically meaningful aspect of environmental disclosures was whether companies met all known and likely future environmental control standards. Areas in which the bankers would like to see more disclosures include among other things provision for clean-up costs, breaches of environmental standards, contingent liability data, compliance with external standards and the impact of environmental expenditure on future results.

Rogers (2005) provided comprehensive guidance on compulsory environmental disclosures in financial statements. According to Rogers (2005) material information on the following should be disclosed:

- Environmental costs, including clean-up costs, pollution control costs and environmental damage costs (claims and fines).
- Environmental (contingent) liabilities for rehabilitation costs as well as potential claims.
- Environmental impairment of assets due to environmental reasons.
- Environmental risks (legal compliance and incidents) and opportunities.

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- Environmental assets, including capitalised environmental costs, environment-related rights of recovery and emission credits.

4.2 Guidance by the South African Institute of Chartered Accountants (SAICA)

SAICA (1997) suggested that the following environmental issues be included in the AR:

- Environment protection policies and goals.
- Compliance with environmental laws and regulations and consequences of violations.
- Existing and planned pollution control.
- Protection costs.
- Restoration costs.
- Potential liability and any current or pending investigations or proceedings by regulators.

4.3 Global Reporting Initiative (GRI) *Guidelines for Sustainability Reporting*

The 3rd generation GRI *Guidelines for Sustainability Reporting* (GRI 2006) are arguably the most important and widely used source of guidance for environmental reporting. The main guidelines and the Mining and Metals Sector Supplement (GRI 2005; GRI 2010) are relevant to this study. The

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guidelines contain a wealth of guidance on environmental disclosures with business implications. Their materiality, inclusivity and sustainability context principles all refer to business implications of sustainability issues in some or other form (pages 8-9, 11-12 of the GRI guidelines). Requirements for standard disclosures of strategy and profile include a statement of the most senior decision-maker of the organisation about the relevance of sustainability to the organisation and its strategy, focusing on the impact of sustainability trends, risks and opportunities regarding the long-term prospects and financial performance of the organisation. Such disclosure should concentrate specifically on information relevant to financial stakeholders (pages 20-21 of the GRI guidelines). Under economic indicators specific attention is given to financial implications and other risks and opportunities for the organisation's activities due to climate change (page 6 of the indicator protocols for economic indicators [performance indicator EC2[16]]). Disclosure of the environmental dimension includes major organisational risks and opportunities related to environmental issues (page 27 of the GRI guidelines). Environmental performance indicators that are particularly relevant to this study include energy saved due to conservation and efficiency improvements (performance indicator EN5), initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives (EN6), initiatives to reduce indirect energy consumption and reductions achieved (EN7), percentage and total volume of water recycled and reused (EN10), monetary value of significant fines and total number of non-monetary sanctions for noncompliance with

[16] The GRI performance indicators are numbered with a prefix indicating the category to which the indicator belongs. For example, EC indicates an economic performance indicator, and EN indicates an environmental performance indicator.

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environmental laws and regulations (EN28), and total environmental protection expenditures and investments by type (EN30) (pages 28-29 of the GRI guidelines).

Whereas the GRI guidelines are generally applicable to a wide variety of industries, sector-specific supplements have been developed to deal with sector-specific issues for inclusion in sustainability reporting. One such supplement addresses the mining and metals sector. A pilot version was issued in 2005 (GRI 2005). Sector-specific indicators include the approach to management of overburden, rock, tailings and sludge/residues (performance indicator MM6[17]), and the number or percentage of operations with closure plans (MM10) (pages 29 and 35 of *Mining and Metals Sector Supplement Pilot Version*). In 2010, the pilot version of the *Mining and Metals Sector Supplement* was replaced by a final version (GRI 2010). The pilot version was applicable in the period covered by the reports assessed in this study. Therefore, the details of the pilot version have been discussed above. The final version contains the same additional sector-specific indicators as those discussed above with similar guidance on disclosure.

Several other initiatives that have reporting requirements cooperated with the GRI to integrate the various reporting requirements with the GRI guidelines. The International Council on Mining and Metals (ICMM) cooperated with the GRI in developing the *Mining and Metals Sector Supplement* (GRI 2005; GRI 2010) Therefore, complying with the *Mining and Metals Sector Supplement*

[17] MM indicates a mining and metals sector-specific performance indicator.

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will ensure compliance with the ICMM SD principles (ICMM 2005), when reporting.

4.4 SAMREC Code for the reporting of exploration results, mineral resources and mineral reserves.

In 2000, the SAMREC issued its first *Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves* (SAMREC 2000). In the same year, the Code was adopted by the JSE in their listing requirements. In 2007, the first version was replaced by a second version of the Code (SAMREC 2007). The SAMREC Code sets out minimum standards, recommendations and guidelines for public reporting of exploration results, mineral resources and mineral reserves in South Africa. The Code is applicable to the reporting of all styles of solid mineralisation or economic deposit. Certain commodities, namely coal and diamonds, have specific additional reporting requirements. For companies issuing ARs, or other summary reports, the inclusion of all material information relating to exploration results, mineral resources and mineral reserves is recommended. The SAMREC Code stresses the application of certain principles in the reporting of exploration results, mineral resources and mineral reserves, namely materiality, transparency and competency (page 5 of the SAMREC Code).

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4.5 The King II Report on corporate governance in South Africa

The King II Report on corporate governance in South Africa was released in 2002 (IOD 2002). The report contained extensive guidance on sustainability and, by implication, on environmental reporting in a dedicated section in integrated sustainability reporting (IOD 2002). Guidance is provided on the relevance of sustainability issues for business. The report points out that non-financial issues have significant financial implications for a company (IOD 2002:92): "Just as financial reporting provides a record of where the company has been, many aspects of non-financial reporting provide an indication of where the enterprise can go and how it will get there" (IOD 2002:95). The reports points out that "[t]he most significant obstacle to implementing meaningful social, ethical and environmental accounting and reporting lies in the way management thinks within a company. As long as these are perceived as 'soft issues', they are unlikely to receive the focus they also merit from a value-generating, economic point of view" (IOD 2002:97). The report deliberately avoids developing a prescriptive list of disclosure requirements, although it recommends that issues such as participation in sustainability indices, competitive advantages obtained through environmentally responsible products and services, and how they deal with environmental issues as trade barriers should be reported on (IOD 2002:97. The report stresses the need to integrate environmental corporate governance principles with the financial components and other aspects of the business in order to make them effective (IOD 2002:111).

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4.6 JSE Socially Responsible Investment (SRI) Index

Parallel with the publication of the King II Report, the JSE launched the SRI Index in South Africa in May 2004.

Most of the environmental indicators used in the SRI are general environmental indicators with little indication of business implications or integration into core processes. The following environment-related indicators or criteria that are included in the JSE SRI index are most relevant in the context of this study:

- Responsibility for environmental policy at board or department level.
- Policy must address product or service environmental impact.
- Strategic moves towards sustainability.
- Environment-related non-compliance, prosecution, fines, and accidents.

4.7 Conclusion: Guidance on environmental reporting from selected best practice guidelines

A variety of international and national best practice documentation provides comprehensive guidance on reporting environmental aspects that have business implications. Some guidance points in the direction of including such information in the AR, whilst others assume that this information will be disclosed in an ER or SR. Several of these guidance documents emphasise

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the importance of linking environmental performance to the financial performance of the organisation.

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ANNEXURE 2: ENVIRONMENTAL DISCLOSURE INDEX

Company: ……
Financial Report Covering Period: ……
Environmental Report:
Nature of Report: Stand-alone Environmental Report/Integrated into Sustainability Report/Integrated into Annual Report (delete whichever is not applicable)
Name of Report: ……..
Period Covered: ……..

Indica-tor No	**Does the FR refer to/disclose information on: …… If so, where (page, section, ref no) and how (briefly describe the nature of the disclosure)**	**Yes /No**	**Does the ER refer to/disclose information on: …….. If so, where (page, section, ref no] and how (briefly describe the nature of the disclosure)**	**Yes /No**	**[Source of indicator]**
1	**Environmental report (in general)** Where: ……... How: …… …… ……		**Financial report (in general)** Where: ……... How: ……..…… …… ……		King III Report
	Assets and Liabilities		*Assets and Liabilities*		
2	Financial provision/liabilities for rehabilitation after exploration or at mine closure, and changes therein Where: ……... How: …… …… ……		Financial provision/liabilities for rehabilitation after exploration or at mine closure, and changes therein Where: ……... How: …… …… ……		MPRDA IAS 37 (IASB 1999) IFRIC 1 (IASB 2004a) MM10 (GRI 2005) Deegan & Rankin 1999 Thompson & Cowton 2004
3	Interest in rehabilitation funds Where: ……... How: …… ……		Interest in rehabilitation funds Where: ……... How: …… ……		IAS 37 (IASB 1999) IFRIC5 (IASB 2004c)

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	.....		.....		
4	Concurrent expenditure on rehabilitation Where: ..... How:		Concurrent expenditure on rehabilitation Where: ..... How:		IAS 37 (IASB 1999) Rogers 2005 SAICA 1997 Deegan & Rankin 1999
5	Other environment-related provisions or (contingent) liabilities Where: ..... How:		Other environment-related provisions or (contingent) liabilities Where: ..... How:		IAS 37 (IASB 1999) SAICA 1997 Deegan & Rankin 1999 Thompson & Cowton 2004
6	Ore reserve volumes and valuation Where: ..... How:		Ore reserve volumes and valuation Where: ..... How:		SAMREC 2007
7	Environment-related equipment (capital and depreciation) Where: ..... How:		Environment-related equipment (capital and depreciation) Where: ..... How:		IAS 16 (IASB 2003c) Rogers 2005 Deegan & Rankin 1999
8	Cost-benefit analysis regarding environmental investments Where: ..... How:		Cost-benefit analysis regarding environmental investments Where: ..... How:		
9	Environment-related costs for bringing PP&E into operation included in its carrying amount Where: ..... How:		Environment-related costs for bringing PP&E into operation included in its carrying amount Where: ..... How:		IAS 16 (IASB 2003c)

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10	Land partially depreciated due to rehabilitation costs included in its carrying amount Where: ..... How:		Land partially depreciated due to rehabilitation costs included in its carrying amount Where: ..... How:		IAS 16 (IASB 2003c)
11	Impairment of assets due to environmental factors Where: ..... How:		Impairment of assets due to environmental factors Where: ..... How:		IAS 16 (IASB 2003c) Rogers 2005
12	Accounting for carbon credits Where: ..... How:		Accounting for carbon credits Where: ..... How:		IFRIC 3 (IASB 2004b)
	Compliance		*Compliance*		
13	Environment-related legislation and agreements that may have strategic implications for the organisation Where: ..... How:		Environment-related legislation and agreements that may have strategic implications for the organisation Where: ..... How:		GRI Guidelines (2006) SAICA 1997 Deegan & Rankin 1999 Thompson & Cowton 2004
14	Environment-related fines and their tax effect Where: ..... How:		Environment-related fines and their tax effect Where: ..... How:		IAS 12 (IASB 1998) EN28 (GRI 2006) JSE SRI Index 2004 SAICA 1997 Deegan & Rankin 1999 Thompson & Cowton 2004
15	Other environment-related non-compliance issues, non-monetary sanctions and their implications Where:		Other environment-related non-compliance issues, non-monetary sanctions and their implications Where:		EN28 (GRI 2006) JSE SRI Index 2004 SAICA 1997

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	How: …… …… ……		How: …… …… ……		Thompson & Cowton 2004
16	Significant spills and resulting financial and other implications Where: ……... How: …… …… ……		Significant spills and resulting financial and other implications Where: ……... How: …… …… ……		NEMA NWA JSE SRI Index 2004 EN23 (GRI 2006) Rogers 2005 Thompson & Cowton 2004
17	Other environment-related emergency incidents, and resulting financial and other implications Where: ……... How: …… …… ……		Other environment-related emergency incidents, and resulting financial and other implications Where: ……... How: …… …… ……		NEMA NWA JSE SRI Index 2004 EN23 (GRI 2006)
	Strategic Management		*Strategic Management*		
18	Statement by CEO/chair about the relevance of sustainability/environmental issues to the organisation and its strategy Where: ……... How: …… …… ……		Statement by CEO/chair about the relevance of sustainability/environmental issues to the organisation and its strategy Where: ……... How: …… …… ……		King II Report GRI Profile Disclosures (GRI 2006) JSE SRI Index 2004
19	Financial implications and other risks and opportunities for the organisation's activities due to climate change Where: ……... How: …… …… ……		Financial implications and other risks and opportunities for the organisation's activities due to climate change Where: ……... How: …… …… ……		GRI Guidelines (GRI 2006) EC2 (GRI 2006)
20	Other environmental risks and opportunities for the organisation Where: ……...		Other environmental risks and opportunities for the organisation Where: ……...		GRI Guidelines (GRI 2006) Rogers 2005

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	How: …… …… ……		How: …… …… ……		
21	Governance mechanisms to identify, prioritise and manage strategic environmental risks and opportunities Where: ……... How: …… …… ……		Governance mechanisms to identify, prioritise and manage strategic environmental risks and opportunities Where: ……... How: …… …… ……		GRI Profile Disclosures (GRI 2006) JSE SRI Index 2004
22	Targets to address strategic environmental issues and performance against these targets Where: ……... How: …… …… ……		Targets to address strategic environmental issues and performance against these targets Where: ……... How: …… …… ……		GRI Profile Disclosures (GRI 2006) SAICA 1997 Deegan & Rankin 1999
23	Environment-related stakeholders that can affect the ability of the organisation to achieve its objectives Where: ……... How: …… …… ……		Environment-related stakeholders that can affect the ability of the organisation to achieve its objectives Where: ……... How: …… …… ……		GRI Profile Disclosures (GRI 2006)
24	Environmental resources that are critical to the organisation's business operations Where: ……... How: …… …… ……		Environmental resources that are critical to the organisation's business operations Where: ……... How: …… …… ……		GRI Materiality Principle GRI 2006)
25	Integration of environmental issues into the core business and processes of the organisation Where: ……... How: …… …… ……		Integration of environmental issues into the core business and processes of the organisation Where: ……... How: …… …… ……		King II Report

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	Audit		*Audit*		
26	Risk of material misstatement of financial statements due to environmental matters Where: ..... How:		Risk of material misstatement of financial statements due to environmental matters Where: ..... How:		IAPS 1010 (IAASB 1998)
27	Management representations to auditor regarding environmental issues Where: ..... How:		Management representations to auditor regarding environmental issues Where: ..... How:		IAPS 1010 (IAASB 1998)
28	Use of environmental audits by auditor Where: ..... How:		Use of environmental audits by auditor Where: ..... How:		IAPS 1010 (IAASB 1998)
29	Use of external environmental expert by auditor Where: ..... How:		Use of external environmental expert by auditor Where: ..... How:		IAPS 1010 (IAASB 1998)
30	Reconciliation of environmental information with relevant financial data Where: ..... How:		Reconciliation of environmental information with relevant financial data Where: ..... How:		IAPS 1010 (IAASB 1998)
	Operational Management		*Operational Management*		
31	Waste disposal, emission treatment and remediation costs Where:		Waste disposal, emission treatment and remediation costs Where:		EN30 (GRI 2006) MM6 (GRI 2005) SAICA 1997

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	How: …… …… ……		How: …… …… ……		Rogers 2005
32	Prevention of environmental pollution costs Where: ……... How: …… …… ……		Prevention of environmental pollution costs Where: ……... How: …… …… ……		EN30 (GRI 2006) SAICA 1997
33	General environmental management costs Where: ……... How: …… …… ……		General environmental management costs Where: ……... How: …… …… ……		EN30 (GRI 2006) Rogers 2005 Deegan & Rankin 1999
34	Conservation and efficiency improvement initiatives to reduce energy consumption, reductions achieved, resulting financial savings and other impacts on the organisation Where: ……... How: …… …… ……		Conservation and efficiency improvement initiatives to reduce energy consumption, reductions achieved, resulting financial savings and other impacts on the organisation Where: ……... How: …… …… ……		EN5 and EN7 (GRI 2006) Deegan & Rankin 1999
35	Eco-efficiency initiatives to reduce the use of water, raw materials and other environmental resources, resulting financial savings and other impacts on the organisation Where: ……... How: …… …… ……		Eco-efficiency initiatives to reduce the use of water, raw materials and other environmental resources, resulting financial savings and other impacts on the organisation Where: ……... How: …… …… ……		GRI Guidelines (GRI 2006)
36	Abnormal amounts of waste materials during production processes Where: ……... How: …… …… ……		Abnormal amounts of waste materials during production processes Where: ……... How: …… …… ……		IAS2 (IASB 2003b)

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37	Report on water use and the financial implications thereof Where: ..... How:		Report on water use and the financial implications thereof Where: ..... How:		NWA EN10 (GRI 2006)
38	Required reports on ambient air and atmospheric impacts and the financial implications thereof Where: ..... How:		Required reports on ambient air and atmospheric impacts and the financial implications thereof Where: ..... How:		NEM: AQA
39	Initiatives to produce energy-efficient, water-efficient and other resource-efficient products and services Where: ..... How:		Initiatives to produce energy-efficient, water-efficient and other resource-efficient products and services Where: ..... How:		JSE SRI Index 2004 EN6 (GRI 2006)
40	Competitive advantage or market differentiation achieved as a result of eco-efficiency measures or eco-efficient products and services Where: ..... How:		Competitive advantage or market differentiation achieved as a result of eco-efficiency measures or eco-efficient products and services Where: ..... How:		King II Report
41	The implications of environmental performance and management as trade barrier Where: ..... How:		The implications of environmental performance and management as trade barrier Where: ..... How:		King II Report
42	Benefits of participation in sustainability/environmental financial indices Where:		Benefits of participation in sustainability/environmental financial indices Where:		King II Report

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	How: …… …… ……		How: …… …… ……		
43	Damage to/loss of heritage assets and the financial implications thereof Where: ……... How: …… …… ……		Damage to/loss of heritage assets and the financial implications thereof Where: ……... How: …… …… ……		NHRA
44	Finding unknown graves or other heritage objects during development work and the financial implications thereof Where: ……... How: …… …… ……		Finding unknown graves or other heritage objects during development work and the financial implications thereof Where: ……... How: …… …… ……		NHRA
45	Reporting on biodiversity plans and monitoring and the financial implications thereof Where: ……... How: …… ……		Reporting on biodiversity plans and monitoring and the financial implications thereof Where: ……... How: …… ……		NEM: Biodiversity Act
46	Any other environmental issue(s) that may have material financial or other business implications for the organisation Where: ……... How: …… ……		Any other environmental issue(s) that may have material financial or other business implications for the organisation Where: ……... How: …… ……		Companies Act (1973) GRI Guidelines (GRI 2006) King II Report

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ANNEXURE 3: SUMMARY OF INDIVIDUAL ASSESSMENTS OF REPORTS

Companies included in the sample and referred to by the number indicated:

1. Anglo American
2. AngloGold Ashanti
3. Anglo Platinum
4. Impala Platinum
5. BHP Billiton
6. Gold Fields

Indica-tor No	**Does the FR refer to/disclose information on: …… If so, where (page, section, ref no) and how (briefly describe the nature of the disclosure)**	**Yes /No**	**Does the ER refer to/disclose information on: …….. If so, where (page, section, ref no) and how (briefly describe the nature of the disclosure)**	**Yes /No**	**Details of cross-references between FR and ER**
1	***Environmental report (in general)*** 1: Refers to SR to be published and what it will address (governance section) 2: Refers to SR to be published and what it will address. Three references (including CEO) and detailed description. 3: Refers twice (including Chair) to SR in context of corporate governance (not environmental), Table of Contents 4: Refers twice to SR with reference to summary in AR 5: Refers to other sections and SR for environmental performance (directors report) 6: Refers twice (including CEO) to SR	Y	***Financial report (in general)*** 1,5,6: None 2: General reference 3: Refers to detailed market review of opportunities linked to climate change 4: Refers to AR for details on relevant governance structures	Y/N	1: FR refers to SR (broad) 2: FR refers in several places to SR (broad and specifics); SR refers to AR (general) 3: FR refers to SR with regard to corporate governance and the table of contents, not environmental issues. ER refers to FR for detailed market review of opportunities linked to climate change. 4: A five-page summary of the SR is given in the FR. The ER refers to the FR for details on the SHE Group

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					Executive and Audit Committee. 5: The FR refers to the ER for environmental performance information. 6: Main report refers to SD section
	Assets and Liabilities		*Assets and Liabilities*		
2	***Financial provision/liabilities for rehabilitation after exploration or at mine closure, and changes therein*** 1: Seven references, including accounting policies, balance sheet, notes, constructive obligation 2: 13 references, including accounting policies, balance sheet, notes 3: 13 references, including accounting policies, balance sheet, five notes, assets held for sale 4: Six references, including accounting policies, liabilities, balance sheet, guarantees 5: Six references, including accounting policies, Balance Sheet and note, estimate uncertainty 6: Six references, including management discussion, directors report, changes, notes		***Financial provision/liabilities for rehabilitation after exploration or at mine closure, and changes therein*** 1: General reference 2: Three references, including environmental liability figures, detailed discussion of process, details for each mine. 3: Information on liabilities and guarantees 4: Information on liabilities and provisions 5: None 6: Information on provisions per operation		
3	***Interest in rehabilitation funds*** 1: Five references, including balance sheet, segment, changes, disposal groups and assets held for sale 2: Six references, including accounting policies and detail of funds and changes 3: Ten references, including investments held by trusts, assets held for sale, balance sheet, guarantees 4: One general reference 5: None		***Interest in rehabilitation funds*** 1,2,4,5,6: None 3: Total amount in environmental trusts		

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	6: Six references, including balance sheet, notes changes, interest, deferred taxation				
4	***Concurrent expenditure on rehabilitation*** 1, 4: None 2, 5: Use of environmental provision during year 3: Accounting policy on concurrent rehabilitation expenses 6: Four references, including management discussion, and amount spent		***Concurrent expenditure on rehabilitation*** 1,2,3,5,6: None 4: Refers to concurrent rehabilitation but no financial figures		
5	***Other environment-related assets, provisions or (contingent) liabilities*** 1: Four references to biological assets (forestry and other agricultural activity) 2: Contingent liability for ground water pollution 5: One pending environmental litigation regarding ground water contamination, provision made 3,4,6: None		***Other environment-related provisions or (contingent) liabilities*** 1 - 6: None		
6	***Ore reserve volumes and valuation*** 1: Three references in financial statement and a detailed report [20pp] 2: Two references in financial statement and a detailed section [6pp] 3: One reference in CEO statement plus two detailed sections [22pp] 4: Two references in financial statement and a summary section [6pp] 5: Two references in financial statement and a detailed section [29pp] 6: Two references in financial statement and in directors report, a detailed report [11pp]		***Ore reserve volumes and valuation*** 1 - 6: None		
7	***Environment-related equipment (capital and depreciation)*** 1 - 6: None		***Environment-related equipment (capital and depreciation)*** 1 - 6: None		
8	***Cost-benefit analysis regarding environmental investments***		***Cost-benefit analysis regarding environmental investments***		

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	1: Refers to Research & Development (R&D) to minimise environmental impact but no cost benefit analysis 2 - 6: None		1: General reference to reduction of liabilities due to proper planning 2,3,4,6: None 5: Two case studies to reduce costs but no cost benefit analysis		
9	***Environment-related costs for bringing PP&E into operation included in its carrying amount*** 1 - 6: None		***Environment-related costs for bringing PP&E into operation included in its carrying amount*** 1 - 6: None		
10	***Land partially depreciated due to rehabilitation costs included in its carrying amount*** 1 - 6: None		***Land partially depreciated due to rehabilitation costs included in its carrying amount*** 1 - 6: None		
11	***Impairment of assets due to environmental factors*** 1 - 5: None 6: Impairment of rehabilitation assets relating to old slimes dams at depleted mines.		***Impairment of assets due to environmental factors*** 1 - 6: None		
12	***Accounting for carbon credits*** 1: Sale of excess emission credits to reduce unit costs 2 - 6: None		***Accounting for carbon credits*** 1: Refers to carbon dioxide (CO_2) emission reduction projects under Clean Development Mechanism (CDM) 2: Refers to opportunities for emissions trading 3,4,6: None 5: Investigating carbon trading benefits		
	Compliance		*Compliance*		
13	***Environment-related legislation and agreements that may have strategic implications for the organisation*** 1,6: None 2: Discusses increasing environmental legislation, financial impacts as part of risk management 3,4: European legislation for emissions control creates market opportunities 5: General reference to stricter regulatory regime		***Environment-related legislation and agreements that may have strategic implications for the organisation*** 1,2,3,5: None 4: Mentions three new SA laws that will have an impact 6: Compliance has potential cost implications		
14	***Environment-related fines and their tax effect***		***Environment-related fines and their tax effect***		

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	1,2,3: None 4: No significant breaches or fines 5: Five fines, details given, all non-South African 6: No environmental fines or penalties		1,5: Specific information on fine payments and potential fines 2,4: No significant fines for non-compliance 3,6: No environmental litigation or fines		
15	***Other environment-related non-compliance issues, non-monetary sanctions and their implications*** 1,4,6: None 2: Contingent liability for groundwater pollution in South Africa; doing research on best methods 3: Sulphur dioxide (SO_2) emissions within limits 5: One pending environmental litigation regarding groundwater contamination, provision made		***Other environment-related non-compliance issues, non-monetary sanctions and their implications*** 1: Visit by environmental enforcement unit after negative publicity of sale 2: Non-compliance with environmental permits resulted in 12-day shutdown 3: Refers to operations where SO_2 is below limit, overview of environmental compliance. 4: Legal compliance audit, no critical incidents, mentions specifics of planned compliance with new regulations 5: None 6: Spill resulted in field notice and closure until rehabilitation		
16	***Significant spills and resulting financial and other implications*** 1,3,4: None 2: Refers to groundwater contamination resulting in contingent liability 5: No significant reported incidents 6: 23 level 2 incidents (mostly linked to ageing pipelines), no serious environmental incidents		***Significant spills and resulting financial and other implications*** 1,4: None 2: Description of all incidents, reference to financial implications only addresses compensation paid in one case without details 3: General reference to spills, overview of 5 547 level 1 incidents, detailed description of six level 2 incidents. No cost implications. 5: No level 3 incidents 6: Several examples of spills but no cost implications		
17	***Other environment-related emergency incidents, and resulting financial and other implications***		***Other environment-related emergency incidents, and resulting financial and other implications***		

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	1 - 5: None 6: No additional information compared to Indicator No 16		1,3,4,5: None 2: Air emissions exceeding limits 6: Total dissolved solids and sulphate levels in groundwater exceeding limits but no cost or other implications.		
	Strategic Management		*Strategic Management*		
18	***Statement by CEO/chair about the relevance of sustainability/environmental issues to the organisation and its strategy*** 1: Four references. SD for new operations, energy security (impact on mining operations), climate change, water shortages, emissions, biodiversity, custodianship 2: Four references, including impact of power shortages on operations, general discussion but no business implications 3,4: Impact of electricity crisis 5: None 6: Impact of energy crisis, drought, rainfall on operations; cost increases due to scarcity of commodities, costs of tailings management, tyre shortage.		***Statement by CEO/chair about the relevance of sustainability/environmental issues to the organisation and its strategy*** 1: Two references. Impact of climate change issue on coal business, involved in clean coal technology, commercial carbon storage, uncertainty regarding regulations and costs delay new technology, business case for social support to community, water is strategic, integration in all aspects of business (embedded), stakeholder management core for future. 2,3,6: None 4: Energy crisis discussed. Climate change implications considered at senior level. 5: General reference to climate change debate but none to relevance of environmental issues		1: FR referred to ER for progress on implementing the Global Compact principles.
19	***Financial implications and other risks and opportunities for the organisation's activities due to climate change*** 1: Use of CDM to maximise business benefits (but no details), positive impact due to demand for products, negative impact of carbon emission policies on cost of energy, impact on water distribution critical for operations, employee education 2: Vague statement on climate change debate, evaluating impacts, carbon footprinting 3,4: None		***Financial implications and other risks and opportunities for the organisation's activities due to climate change*** 1: Impact of climate change on coal business, involved in clean coal technology, impact of climate change on water supply, commissioned study on impacts of climate change on operations and projects 2: Risks and opportunities of climate change. Intent on quantifying climate change implications, energy efficiency, cost reduction, water supply issues, higher energy costs, community pressures,		3: ER referred to FR for detailed market review of opportunities linked to climate change.

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	5: Stricter regulations impact on products and margins, assessment of climate change impacts uncertain and site-specific 6: Refers to impacts of drought and flooding caused by excessive rainfall on operations. CDM project for methane		CDM opportunities 3: Refers to increased demand for products due to emissions control. Cross-refers to FR for market review of these opportunities 4: Considered by Safety, Health, Environment and Quality (SHEQ) Audit Committee and SHEQ Executive Committee. Risks include water and electricity shortages, as well as alternative energies [all with cost implications]. Opportunities for cleaner technology products 5: Climate change risks uncertain and site-specific, including examples of rainfall, sea levels, storms, temperature and water shortage – with potential cost implications 6: Excessive rainfall linked to climate change		
20	***Other environmental risks and opportunities for the organisation*** 1: Impact of energy and water shortages, recycling, scrap availability and efficient use of products may reduce demand, extreme weather conditions, environmental impact related fines/penalties, part of risk management 2: Main impact energy shortages, risk management, also weather conditions, regulations, compliance costs, closure costs, pumping of water 3: Energy shortages have a major impact on production and finance, also timber shortages. Positive impact of stricter regulation on demand for product 4: Impact of power shortages on costs, capital expansion project postponed due to delays relating to environmental impact assessment (EIA) 5: Time and cost (capital and operational) impact of increased requirements and delays in issuing of permits, water and electricity supply, compliance		***Other environmental risks and opportunities for the organisation*** 1: Water shortage, environmental impact on planning, impact on access to land and permits, power shortages, contributes to reduction of water security issue, methane into saleable energy (profitable) 2: Primarily power shortages, impact on suppliers and client relations 3: Compliance and significant risks affect identification of material issues (general) 4: Power shortages resulted in lost production and delayed expansion, delays in issuing of environmental permits 5: Greenhouse gas (GHG) emissions one of five material issues, business risks and opportunities related to water 6: Energy constraints, CDM, energy efficiency, rising cost of commodities due to increased global demand (diesel, timber, tyres, chemicals), compliance costs, increased litigation		

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	costs for remediation, emissions, increased expectations regarding closure, incidents damage reputation, decrease in aluminium production due to power supply, weather disruptions 6: Power supply impacts on production and methods. Global demand for commodities makes it scarcer with cost implications				
21	***Governance mechanisms to identify, prioritise and manage strategic environmental risks and opportunities*** 1: Role of Executive Committee and Safety and SD Committee (functions, meetings and composition) for priorities and review, internal reporting on environmental risks and opportunities, oversight and analysis of long-term trends, responsible member on Executive Committee. Refers to SR for approach to SD and measurement of performance 2: Executive Vice-President – Sustainability, Safety, Health and SD Committee (details) 3,6: None 4: SHE Audit Committee details provided 5: Sustainability Committee and Vice-President Health, Safety, Environmental & Communication and SD		***Governance mechanisms to identify, prioritise and manage strategic environmental risks and opportunities*** 1: None 2: Details on *Report to Society* Committee. Role of Safety, Health and SD Committee in reporting and details on composition and functioning. Refers to Corporate Environmental Review Programme, disclosure of environmental risks and management of environmental liabilities 3: Safety and SD Committee and board member responsible for SD, compliance reporting to top management 4: Group Executive for SHE; SHE Audit Committee, refers to AR for details 5: Details (4pp) on governance structures, responsibilities and guidance documents 6: SHE Committee details, no reference to risks or opportunities		1: FR referred to SR for their approach on sustainability management and measurement of performance. 4: ER referred to AR for details on governance structures.
22	***Targets to address strategic environmental issues and performance against these targets*** 1: KPIs for CO_2 emissions, energy intensity and total water use. Graphics with performance. Targets and performance on energy use and CO_2 emissions 2,3,4,6: None 5: Five-year targets for GHG emissions, recycled water and land rehabilitated		***Targets to address strategic environmental issues and performance against these targets*** 1: Targets and performance for energy intensity savings 2: No mention of strategic environmental issues, but energy efficiency emerges throughout report as an issue. Refers to targets 3: Explanation of targets and how they were met 4: Targets for energy use set by DME Energy		

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			Efficiency Accord and Eskom. Working group established to develop plans. No details 5: Specific environmental targets and performance, GHG emissions, water recycling 6: None		
23	***Environment-related stakeholders that can affect the ability of the organisation to achieve its objectives*** 1,2,3,5,6: None 4: General reference to environmental stakeholders		***Environment-related stakeholders that can affect the ability of the organisation to achieve its objectives*** 1: Refers to well-funded opposition campaign against pebble project. CEO indicates that if not environmentally sustainable, project should not continue 2: Cyanide Code, changes to operational processes due to stakeholder concerns, increased pressure from neighbouring communities due to crop failure and depletion of natural resources 3: Refers to identification of specific environmental stakeholder groups but no indication of how they can affect company 4: Mentions some environmental stakeholders, but no details or impact 5,6: None		
24	***Environmental resources that are critical to the organisation's business operations*** 1,6: None 2: General reference to large water resource close to new development 3: Water supply 4,5: Power and water		***Environmental resources that are critical to the organisation's business operations*** 1,6: Water 2 - 5: None		
25	***Integration of environmental issues into the core business and processes of the organisation*** 1,2,3,4,6: None 5: Closure planning integrated into business planning		***Integration of environmental issues into the core business and processes of the organisation*** 1: Embedded in business processes but no specifics, water and energy issues integration 2: SHE performance integrated into operations		

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			and risk management and performance review. Environmental expenditures integrated into operational expenses and cannot be shown separately 3: Business case for biodiversity action plans not yet developed 4,6: None 5: Integration into risk management; integration of closure planning into life of asset planning; cannot report on environmental expenses due to integration		
	Audit		*Audit*		
26	***Risk of material misstatement of financial statements due to environmental matters*** 1 - 6: None		***Risk of material misstatement of financial statements due to environmental matters*** 1 - 6: None		
27	***Management representations to auditor regarding environmental issues*** 1 - 6; None		***Management representations to auditor regarding environmental issues*** 1 - 6: None		
28	***Use of environmental audits by auditor*** 1 - 6: None		***Use of environmental audits by auditor*** 1 - 6: None		
29	***Use of external environmental expert by auditor*** 1 - 6: None		***Use of external environmental expert by auditor*** 1 - 6: None		
30	***Reconciliation of environmental information with relevant financial data*** 1 - 6: None		***Reconciliation of environmental information with relevant financial data*** 1 - 6: None		
	Operational Management		*Operational Management*		
31	***Waste disposal, emission treatment and remediation costs*** 1,3,4,5: None 2: Improved waste management methods resulted in significant savings and increased production (no details)		***Waste disposal, emission treatment and remediation costs*** 1,3,6: None 2: Major reportable incidents defined (no details) 4: Rehabilitation of five historical waste sites – area and costs given		

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	6: Tailings management facility delays and costs affected performance (no details)		5: Waste reduction reduces operational costs (no details)		
32	***Prevention of environmental pollution costs*** 1,3,5,6: None 2: R&D on environmental impacts of cyanide in residue, non-cyanide gold extraction processes, upgrading waste rock dumps and improved tailing management facility (no costs provided) 4: Significant capital expenditure to limit emissions (no details)		***Prevention of environmental pollution costs*** 1,2,3,5,6: None 4: Capital expenditure of RM60 on water-related infrastructure. Significant capital expenditure to limit SO_2 emissions (no details)		
33	***General environmental management costs*** 1 - 6: None		***General environmental management costs*** 1: Analysts asked questions about costs of SD (no details). Details of environmental taxes paid per continent 2,5: Environmental expenses part of operational expense (integrated into core business) and cannot be shown separately 3: Refers to GRI EN30, keeping track, but no details provided 4,6: None		
34	***Conservation and efficiency improvement initiatives to reduce energy consumption, reductions achieved, resulting financial savings and other impacts on the organisation*** 1: Refers to target for reducing energy use and improve measurements. R&D investment into energy efficiency (no financials). Energy reduction and alternatives to reduce unit costs 2: Need to look at energy use reduction due to power shortages (general) 3: Refers to plan to save energy (no details) 4: Energy savings initiative due to power supply. Energy efficiency critical 5: None 6: Shifting of power demands from peak time		***Conservation and efficiency improvement initiatives to reduce energy consumption, reductions achieved, resulting financial savings and other impacts on the organisation*** 1: Energy use major cost factor. Invests substantial amounts in energy saving projects, savings detailed (quantity and financial), capital expenditure detail for energy savings. Research on energy consumption, reduction diesel consumption achieved (but not normalised) 2: Energy management strategy aims at reducing costs and improving energy efficiency, makes business sense. Specific targets for improvement and actual performance. No financial implications 3: Energy efficiency linked to cost control and		

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	resulted in RM2 savings per quarter; shifting from diesel to battery locomotives will save RM24 a year. Further examples of savings		availability. Examples of energy-efficiency projects and savings achieved (not financial) 4: None 5: Energy efficiency reduces costs (no details). US$ 300m investment in energy efficiency and alternative energy. Commercial power generation from mine ventilation air 6: Refers to energy efficient light bulbs. Data on energy consumption but no costs or normalisation		
35	***Eco-efficiency initiatives to reduce the use of water, raw materials and other environmental resources and resulting financial savings and other impacts on the organisation*** 1: Describes water target and use, as well as efficiency measures. Application of group water management guidelines to reduce unit costs (no details) 2,4,5: None 3: Recycling of platinum from autocatalysts (no details) 6: Tyre retread facility		***Eco-efficiency initiatives to reduce the use of water, raw materials and other environmental resources and resulting financial savings and other impacts on the organisation*** 1: R&D on water consumption, recovery of valuable materials, reduction of capital expenditure costs and use of chemicals, energy savings, smaller tailings facilities, commercial use of recycled materials, water treatment and sale 2: Cyanide use efficiency detail but no financials, targets to improve efficiency of water use and GHG emissions, no details 3: None 4: Efficient use of raw and input materials linked to cost perspective, examples of waste reuse/recycling (no financials) 5: Target for recycling, A$6 investment in reverse osmosis filtration plant to recycle water 6: Data on usage of certain key input materials but no financials or normalisation. Nothing on savings initiatives. Systems to monitor water usage and optimise recycling. Tyre retread facility reduces waste and recycles material. Data on tailings and waste rock generation, no details on recycling		
36	***Abnormal amounts of waste materials during production processes***		***Abnormal amounts of waste materials during production processes***		

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	1,3,4,5,6: None 2: Increase in costs due to increased development waste		1 - 6: None		
37	***Report on water use and the financial implications thereof*** 1,2,3,5,6: None 4: Refers to water use, but no business implications		***Report on water use and the financial implications thereof*** 1: None 2 - 6: Water use efficiency details, but no financials		
38	***Required reports on ambient air and atmospheric impacts and the financial implications thereof*** 1 - 6: None		***Required reports on ambient air and atmospheric impacts and the financial implications thereof*** 1,4,5,6: None 2: Air pollution control measures to improve operational and environmental performance (no details) 3: Ambient air monitoring		
39	***Initiatives to produce energy-efficient, water-efficient and other resource-efficient products and services*** 1: Involved in clean coal technology and zero emissions coal-fuelled power plants 2 - 6: None		***Initiatives to produce energy-efficient, water-efficient and other resource-efficient products and services*** 1,2,4,5,6: None 3: Contribution to fuel cell technology including costs		
40	***Competitive advantage or market differentiation achieved as a result of eco-efficiency measures or eco-efficient products and services*** 1: Clean coal technology will result in opportunities for coal production 2 - 6: None		***Competitive advantage or market differentiation achieved as a result of eco-efficiency measures or eco-efficient products and services*** 1: Involved in clean coal technology to reduce impact of pressure on coal due to climate change 2 - 6: None		
41	***The implications of environmental performance and management as trade barrier*** 1 - 6: None		***The implications of environmental performance and management as trade barrier*** 1 - 6: None		
42	***Benefits of participation in sustainability/environmental financial indices***		***Benefits of participation in sustainability/environmental financial indices***		

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	1,3,4,5,6: None 2: Refers to inclusion, but no reference to benefits		1,2,3,4,6: None 5: Refers to inclusion, but no reference to benefits		
43	***Damage to/loss of heritage assets and the financial implications thereof*** 1 - 5: None 6: Heritage surveys for exploration activities		***Damage to/loss of heritage assets and the financial implications thereof*** 1,2,3,5,6: None 4: Develop Heritage Action Plan to assess impact.		
44	***Finding unknown graves or other heritage objects during development work, and the financial implications thereof*** 1 - 6: None		***Finding unknown graves or other heritage objects during development work, and the financial implications thereof*** 1 - 6: None		
45	***Reporting on biodiversity plans and monitoring and the financial implications thereof*** 1,2,3,5,6: None 4: Biodiversity action plans discussed		***Reporting on biodiversity plans and monitoring and the financial implications thereof*** 1: General reference to contribution to biodiversity and good operator, impact on future mineral plans and securing of licences. Business case for biodiversity (no details) 2,6: None 3: Biodiversity action plans, progress and gaps; no business case developed 4: Biodiversity action plans being developed 5: Number of sites with biodiversity management plans		
46	***Any other environmental issue(s) that may have material financial or other business implications for the organisation*** 1: Environment-related charitable donations (financials) 2 - 6: None		***Any other environmental issue(s) that may have material financial or other business implications for the organisation*** 1,2,3,4,6: None 5: Cost of doing it wrong and value creation of doing it right. Whole page on business case for SD – license to operate, energy efficiency reduces costs, reducing waste reduces operational costs. One criterion for materiality is material impact on ability to be successful business		

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ANNEXURE 4: LIST OF ABBREVIATIONS

AICPA	American Institute of Certified Public Accountants
AR	Annual Report
A4S	Accounting for Sustainability
BPG	Best Practice Guideline
CDM	Clean Development Mechanism
CEO	Chief Executive Officer
CO_2	Carbon Dioxide
CSR	Corporate Social Responsibility
DEAT	Department of Environmental Affairs and Tourism
DME	Department of Minerals and Energy
DWAF	Department of Water Affairs and Forestry
EC	GRI Economic Performance Indicator
EDI	Environmental Disclosure Index
EIA	Environmental Impact Assessment
EN	GRI Environmental Performance Indicator
ER	Environmental Report
ESG	Environmental, Social and Governance
FR	Financial Report
FRS	Financial Reporting Standards
GAAP	Generally Accepted Accounting Practices
GHG	Greenhouse Gas
GRI	Global Reporting Initiative
IAASB	International Auditing and Assurance Standards Board

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IAPS	International Audit Practice Statement
IAS	International Accounting Standard
IASB	International Accounting Standards Board
ICGN	International Corporate Governance Network
ICMM	International Council on Mining and Metals
IFRIC	International Financial Reporting Interpretation Committee
IFRS	International Financial Reporting Standard
IIRC	International Integrated Reporting Committee
IRC	Integrated Reporting Committee
JSE	Johannesburg Stock Exchange
KPI	Key Performance Indicator
MC	Management Commentary
MPRDA	Minerals and Petroleum Resource Development Act
NEMA	National Environmental Management Act
NEM:AQA	National Environmental Management: Air Quality Act
NHRA	National Heritage Resources Act
NWA	National Water Act
PP&E	Property, Plant and Equipment
R&D	Research and Development
SA	South African
SAHRA	South African Heritage Resources Agency
SAICA	South African Institute of Chartered Accountants
SAMREC	South African Mineral Resource Committee
SAPS	South African Police Service
SD	Sustainable Development

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SHE	Safety, Health and Environment
SHEQ	Safety, Health, Environment and Quality
SO_2	Sulphur Dioxide
SR	Sustainability Report
SRI	Socially Responsible Investment
UK	United Kingdom
US	United States
WWF	World Wildlife Fund

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TABLE 1: NUMERICAL ANALYSIS: ENVIRONMENTAL DISCLOSURE INDICATORS

Levels of integration:

1. No disclosure of an indicator
2. Conflicting disclosures in both reports
3. Disclosure in only one report
4. Unrelated disclosures in both reports
5. Related/summarised disclosures in both reports
6. Complementary disclosures in both reports
7. Similar disclosures in both reports

Indicator no	Description	Integration level (number of companies)								Ranking
		1	2	3	4	5	6	7	Ave	
	Category: General cross-reference									
1	General cross-reference between FR and ER			3	3				3.50	10-11
	Average for category General cross-reference								**3.50**	
	Category: Assets and liabilities									
2	Financial provision/liabilities for rehabilitation after exploration or at mine closure, and changes therein			1	1	2	2		4.83	3-4
3	Interest in rehabilitation funds	1		4		1			3.00	13-16
4	Concurrent expenditure on rehabilitation	1		5					2.67	20-21
5	Other environment-related provisions or (contingent) liabilities	3		3					2.00	26-27
6	Ore reserve volumes and valuation			6					3.00	13-16
7	Environment-related equipment (capital and depreciation)	6							1.00	37-46
8	Cost-benefit analysis regarding environmental investments	4		1	1				1.83	28
9	Environment-related costs for bringing PP&E into operation included in its carrying amount	6							1.00	37-46
10	Land partially depreciated due to rehabilitation costs included in its carrying amount	6							1.00	37-46
11	Impairment of assets due to environmental factors	5		1					1.33	35-36
12	Accounting for carbon credits	3		2	1				2.17	24-25
	Average for category Assets and liabilities								**2.17**	

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Indicator no	Description	Integration level (number of companies)								Ranking
		1	2	3	4	5	6	7	Ave	
Category: Compliance										
13	Environment-related legislation and agreements that may have strategic implications for the organisation	1		4	1				2.83	17-19
14	Environment-related fines and their tax effect			3			1	2	4.83	3-4
15	Other environment-related non-compliance issues, non-monetary sanctions and their implications			4	1		1		3.67	8-9
16	Significant spills and resulting financial and other implications	2		1	1	1	1		3.33	12
17	Other environment-related emergency incidents, and resulting financial and other implications	4		2					1.67	29-34
	Average for category Compliance								**3.27**	
Category: Strategic management										
18	Statement by CEO/chair about the relevance of sustainability/environmental issues to the organisation and its strategy			4		1	1		3.83	7
19	Financial implications and other risks and opportunities for the organisation's activities due to climate change			2			4		5.00	2
20	Other environmental risks and opportunities for the organisation				2		4		5.33	1
21	Governance mechanisms to identify, prioritise and manage strategic environmental risks and opportunities			3		1	2		4.33	5
22	Targets to address strategic environmental issues, and performance against these targets	1		3			2		3.67	8-9
23	Environment-related stakeholders that can affect the ability of the organisation to achieve its objectives	2		3	1				2.67	20-21
24	Environmental resources that are critical to the organisation's business operations			6					3.00	13-16
25	Integration of environmental issues into the core business and processes of the organisation	2		3			1		2.83	17-19
	Average for category Strategic management								**3.83**	
Category: Audit										
26	Risk of material misstatement of financial statements due to environmental matters	6							1.00	37-46
27	Management representations to auditor regarding environmental issues	6							1.00	37-46
28	Use of environmental audits by auditor	6							1.00	37-46
29	Use of external environmental expert by auditor	6							1.00	37-46
30	Reconciliation of environmental information with relevant financial data	6							1.00	37-46

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Indicator no	Description	Integration level (number of companies)								Ranking
		1	2	3	4	5	6	7	Ave	
	Average for category Audit								**1.00**	
	Category: Operational management									
31	Waste disposal, emissions treatment and remediation costs	2		3	1				2.50	22
32	Prevention of environmental pollution costs	4		1			1		2.17	24-25
33	General environmental management costs	2		4					2.33	23
34	Conservation and efficiency improvement initiatives to reduce energy consumption, reductions achieved, resulting financial savings and other impacts on the organisation			2	3		1		4.00	6
35	Eco-efficiency initiatives to reduce the use of water, raw materials and other environmental resources, resulting financial savings and other impacts on the organisation			4	1	1			3.50	10-11
36	Abnormal amounts of wasted materials during production processes	5		1					1.33	35-36
37	Report on water use and the financial implications thereof	1		4	1				2.83	17-19
38	Required reports on ambient air and atmospheric impacts and the financial implications thereof	4		2					1.67	29-34
39	Initiatives to produce energy-efficient, water-efficient and other resource-efficient products and services	4		2					1.67	29-34
40	Competitive advantage or market differentiation achieved as a result of eco-efficiency measures or eco-efficient products and services	5						1	2.00	26-27
41	The implications of environmental performance and management as trade barrier	6							1.00	37-46
42	Benefits of participation in sustainability/environmental financial indices	4		2					1.67	29-34
43	Damage to/loss of heritage assets and the financial implications thereof	4		2					1.67	29-34
44	Finding unknown graves or other heritage objects during development work, and the financial implications thereof	6							1.00	37-46
45	Reporting on biodiversity plans and monitoring and the financial implications thereof	2		3				1	3.00	13-16
46	Any other environmental issue(s) that may have material financial or other business implications for the organisation	4		2					1.67	29-34
	Average for category Operational management								**2.13**	
	Summary of information									
	Average score per indicator								**2.46**	
	Average score per integration level	2.83	-	2.09	0.39	0.15	0.43	0.11		
	Percentage distribution per integration level	47.1	-	34.8	6.5	2.5	7.2	1.8		

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TABLE 2: NUMERICAL ANALYSIS: COMPARISON BETWEEN COMPANIES

Levels of integration:

1. No disclosure of an indicator
2. Conflicting disclosures in both reports
3. Disclosure in only one report
4. Unrelated disclosures in both reports
5. Related/summarised disclosures in both reports
6. Complementary disclosures in both reports
7. Similar disclosures in both reports

No	Company	Level of integration (number of environmental disclosure indicators)								Rank-ing
		1	2	3	4	5	6	7	Ave	
1	Anglo American	22		14	4		5	1	2.54	2/3
2	AngloGold Ashanti	17		20	5		4		2.63	1
3	Anglo Platinum	22		18	3	2	1		2.26	6
4	Impala Platinum	24		11	4	2	3	2	2.50	4
5	BHP Billiton	20		19	1	1	4	1	2.54	2/3
6	Gold Fields	25		14	1	2	3	1	2.30	5
	Average								2.46	

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TABLE 3: SENSITIVITY ANALYSIS OF NON-REPORTED DISCLOSURE INDICATORS

Levels of integration:

1. No disclosure of an indicator
2. Conflicting disclosures in both reports
3. Disclosure in only one report
4. Unrelated disclosures in both reports
5. Related/summarised disclosures in both reports
6. Complementary disclosures in both reports
7. Similar disclosures in both reports

Ser	Description	Integration level						Rank-ing	Previous		Dif-fer-ence
		3	4	5	6	7	Ave		Ave	Rank-ing	
Category: General cross-reference											
1	General cross-reference between FR and ER	3	3				3.50	15-17	3.50	10-12	-5
	Average for category General cross-reference						**3.50**	**[2]**	**3.50**	**[3]**	
Category: Assets and liabilities											
2	Financial provision/liabilities for rehabilitation after exploration or at mine closure, and changes therein	1	1	2	2		4.83	4-5	4.83	3-4	-1
3	Interest in rehabilitation funds	4		1			3.40	18	3.00	13-16	-5
4	Concurrent expenditure on rehabilitation	5					3.00	24-36	2.67	20-21	-4
5	Other environment-related provisions or (contingent) liabilities	3					3.00	24-36	2.00	26-27	+2
6	Ore reserve volumes and valuation	6					3.00	24-36	3.00	13-16	-11
7	Environment-related equipment (capital and depreciation)								1.00	37-46	
8	Cost-benefit analysis regarding environmental investments	1	1				3.50	15-17	1.83	28	+13
9	Environment-related costs for bringing PP&E into operation								1.00	37-46	

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Ser	Description	Integration level						Rank-ing	Previous		Dif-fer-ence
		3	4	5	6	7	Ave		Ave	Rank-ing	
	included in its carrying amount										
10	Land partially depreciated due to rehabilitation costs included in its carrying amount								1.00	37-46	
11	Impairment of assets due to environmental factors	1					3.00	24-36	1.33	35-36	+11
12	Accounting for carbon credits	2	1				3.33	21	2.17	24-25	+3
	Average for category Assets and liabilities						**3.38**	**[4]**	**2.17**	**[5]**	
	Category: Compliance										
13	Environment-related legislation and agreements that may have strategic implications for the organisation	4	1				3.20	22-23	2.83	17-19	-5
14	Environment-related fines and their tax effect	3			1	2	4.83	4-5	4.83	3-4	-1
15	Other environment-related non-compliance issues, non-monetary sanctions and their implications	4	1		1		3.67	14	3.67	8-9	-1
16	Significant spills and resulting financial and other implications	1	1	1		1	4.75	6	3.50	12	+6
17	Other environment-related emergency incidents, and resulting financial and other implications	2					3.00	24-36	1.67	29-34	+5
	Average for category Compliance						**3.89**	**[2]**	**3.27**	**[3]**	
	Category: Strategic management										
18	Statement by CEO/chair about the relevance of sustainability/environmental issues to the organisation and its strategy	4		1	1		3.83	12	3.83	7	-5
19	Financial implications and other risks and opportunities for the organisation's activities due to climate change	2			4		5.00	3	5.00	2	-1
20	Other environmental risks and opportunities for the organisation		2		4		5.33	2	5.33	1	-1
21	Governance mechanisms to identify, prioritise and manage strategic environmental risks and opportunities	3		1	2		4.33	8	4.33	5	-3
22	Targets to address strategic environmental issues, and performance against these targets	3			2		4.20	9	3.67	8-9	-1
23	Environment-related stakeholders that can affect the ability of the organisation to achieve its objectives	3	1				3.25	20-21	2.67	20-21	0

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Ser	Description	Integration level						Rank-ing	Previous		Dif-fer-ence
		3	4	5	6	7	Ave		Ave	Rank-ing	
24	Environmental resources that are critical to the organisation's business operations	6					3.00	24-36	3.00	13-16	-11
25	Integration of environmental issues into the core business and processes of the organisation	3			1		3.75	13	2.83	17-19	+4
	Average for category Strategic management						**4.12**	**[1]**	**3.83**	**[1]**	
	Category: Audit										
26	Risk of material misstatement of financial statements due to environmental matters								1.00	37-46	
27	Management representations to auditor regarding environmental issues								1.00	37-46	
28	Use of environmental audits by auditor								1.00	37-46	
29	Use of external environmental expert by auditor								1.00	37-46	
30	Reconciliation of environmental information with relevant financial data								1.00	37-46	
	Average for category Audit								**1.00**	**[6]**	
	Category: Operational management										
31	Waste disposal, emissions treatment and remediation costs	3	1				3.25	20-21	2.50	22	+2
32	Prevention of environmental pollution costs	1			1		4.50	7	2.17	24-25	+17
33	General environmental management costs	4					3.00	24-36	2.	23	-1
34	Conservation and efficiency improvement initiatives to reduce energy consumption, reductions achieved, resulting financial savings and other impacts on the organisation	2	3		1		4.00	10-11	4.00	6	-4
35	Eco-efficiency initiatives to reduce the use of water, raw materials and other environmental resources, resulting financial savings and other impacts on the organisation	4	1	1			3.50	15-17	3.50	10-12	-5
36	Abnormal amounts of waste materials during production processes	1					3.00	24-36	1.33	35-36	+11
37	Report on water use and the financial implications thereof	4	1				3.20	22-23	2.83	17-19	-5
38	Required reports on ambient air and atmospheric impacts and	2					3.00	24-36	1.67	29-34	+5

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Ser	Description	Integration level						Rank-ing	Previous		Dif-fer-ence
		3	4	5	6	7	Ave		Ave	Rank-ing	
	the financial implications thereof										
39	Initiatives to produce energy-efficient, water-efficient and other resource-efficient products and services	2					3.00	24-36	1.67	29-34	+5
40	Competitive advantage or market differentiation achieved as a result of eco-efficiency measures or eco-efficient products and services					1	7.00	1	2.00	26-27	+25
41	The implications of environmental performance and management as trade barrier								1.00	37-46	
42	Benefits of participation in sustainability/environmental financial indices	2					3.00	24-36	1.67	29-34	+5
43	Damage to/loss of heritage assets and the financial implications thereof	2					3.00	24-36	1.67	29-34	+5
44	Finding unknown graves or other heritage objects during development work, and the financial implications thereof								1.00	37-46	
45	Reporting on biodiversity plans and monitoring and the financial implications thereof	3				1	4.00	10-11	3.00	13-16	+3
46	Any other environmental issue(s) that may have material financial or other business implications for the organisation	2					3.00	24-36	1.67	29-34	+5
	Average for category Operational management						**3.58**	**[4]**	**2.13**	**[5]**	
	Summary										
	Average score per indicator						**4.08**		**2.46**		
	Average score per integration level	2.67	0.50	0.19	0.58	0.14					
	Percentage distribution per integration level	65.8	12.3	4.8	14.4	2.7					

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