Chapter 1 - Preliminaries

1.1 Introduction

The impact of our actions is becoming greater in all spheres of our lives. This also includes business, according to De Villiers and Lubbe (1998 p.19). Organisations use resources, and in doing do, create pollution, release toxic emissions and contaminate the earth. It is for this reason that they tend to attract considerably more attention from concerned individuals and environmental groups who are concerned about the future of the environment. Reynolds (2007 p.3), notes that at present, sustainability is on the strategic agenda of several organisations worldwide. Sustainability reporting has thus become a global issue requiring urgent attention.

With regard to the need for sustainable reporting, King III (2009) distinctly identifies the community and environmentalists as stakeholders who have specific information needs. Adopting the guidelines from the King report III (see, De Villiers, 2000), the largest professional body of accountants in South Africa, the South African Institute of Chartered Accountants (SAICA), themselves published a guide on stakeholder communication that suggests that information on employment, the environment and social responsibility should be published (KPMG, 2008).

South African business has positioned itself as the main player in the international development agenda. Despite mixed emotions about the actual developmental impact of private inflows into developing countries, it can be established that the private sector, specifically the mining sector in South Africa, has unmatched potential to play a role in addressing urgent advancement needs (Barkemeyer, 2007). Public perception towards the role of business in society has changed noticeably and rapidly. Rather than seeing the private sector as a problem, society increasingly sees it as part of the solution. This can be illustrated by the UN Global Compact and its direct link to the UN Development Goals: “The Compact’s relevance will lie in each participant’s decision to either build a sustainable society that offers opportunity to the world’s citizens or to condemn millions of people to live riven with conflict, ravaged by disease and bereft by hope. Right now, global players have a choice” (Kell, 2003p.47 as cited in Barkemeyer 2007 p.2).

The value of sustainable reporting cannot be overemphasised given the immense importance of the various resources at play which are often taken for granted. Despite this, valuing these resources in monetary terms is virtually impossible, making sustainability reporting the only viable option to communicate an organisation’s impact on the environment and its management of the resources thereof (IRC, 2011 & Solomon, 2010).

De Villiers (2003 p.13) asserted that although all organisations consume natural resources, including those essential for life, these are never paid for directly. He states that the resources are referred to as "externalities". This is due to the fact that they are not charged for and are therefore, not reflected on the organisation's statement of comprehensive income. It follows that the damage as such cannot be reported by an organisation in monetary terms. Society does, however, bear the full cost of business activity, both indirectly and directly. An example would be, when the quality of air is compromised due to pollution, in some cases it leads to respiratory disease and, in turn, higher medical costs and an impaired quality of life.

In recent years the stakeholder attention towards the identification of methodology to deal more effectively with environmental concerns has increased (Schmidheiny, 1992).This is indicative of the need to be perceptive of multiple stakeholder groups when assessing environmental reporting (IRC, 2011, Solomon, 2010 and Friedman *et al* 2008). Some organisations have a wide range of stakeholders who are 'environmentally concerned' regarding the business activities. (Friedman *et al*, 2008 p.2). It therefore follows that as society's awareness of the significance of environmental issues increases, so too does the importance of reporting thereon. Numerous stakeholders are now demanding information on an organisation's economic, environmental and social performance (IRC, 2011, Solomon, 2010 & King III, 2009). Friedman *et al* (2008 p.1) highlight that investors are becoming increasingly aware of the value of a robust environmental report and expectations for such reporting have spread to organisations in developing markets. This depicts the increasing awareness and flow of information on environmental awareness among investors. Reynolds (2007 p.3) suggests that he is in support of environmental awareness among all investors when he states that "due to public judgements and government legislation, organisations need to be equipped with data to show they are not polluting, are using scarce resources efficiently, and are helping protect the environment". In this case, it is evident that the public and government expect investors to be considerate of both the environment and the financial benefits of their organisation.

The integration of environmental management into all aspects of a company's strategy and operations will be a factor towards the realisation of an environmentally sustainable business model (Blignaut and Heymann 1998, p7). The actual contribution being made towards sustainable development will pass unnoticed if successes (and failures) are not being properly recorded and disclosed. Organisations determined to demonstrate their contribution to and participation in environmentally-sustainable advancement, will have to bridge the gap between environmental management and finance and economics. This is where accounting, integrated reporting and management theory are expected to interact.

Environmental disclosures can ultimately enhance the decision making potential of annual reports in the sense that the general public and environmental groups, i.e. the stakeholders, can use the disclosed information to make knowledgeable decisions such as whether or not to: invest in a specific organisation; to acquire its products; to seek employment with them; or to do business with them (Mitchell and Quinn 2005 p.18). Earlier research conducted on environmental reporting has specifically examined pressure groups, significant external factors, and environmental disclosure in the annual report (Deegan and Gordon 1996).

In order to survive, organisations are required to understand and communicate the many environmental pressures on their operations. In part, survival is assured through technical efficiencies, but institutional theory suggests than an organisation's legitimacy is equally necessary (Powell and DiMaggio, 1991 as cited in Patel and Xavier 2005 p.2). Suchman (1995, p.574) defines organisational legitimacy as the "generalised perception or assumption that the actions of an organisation are desirable, proper, or appropriate within a social system".

Organisational legitimacy, a conferred status, is controlled by those outside the organisation and thus relies on the organisation maintaining a union of loyal stakeholders who have legitimacy-determining power (Patel and Xavier 2005). These stakeholder groups with legitimacy-determining power assist to ensure that organisations will curtail the negative environmental impacts of their operations (Matthews, 1993). In such situations, legitimacy theory suggests that the disclosure strategies employed by the organisations will be aligned to project an image of an upstanding corporate citizen to maintain current relations that enable access to much needed resources required for business success (Dowling and Pfeffer, 1975). An environmental crisis can be detrimental to the point that they affect the organisations' continued success (Deegan *et al*, 2000).

Organisations marred by bad publicity tend to react by disclosing more positive environmental information and ignore the negative (Deegan and Rankin, 1996). Patten (1992) showed that organisations that are facing an environmental crisis will rather disclose more information relating to environmental disclosures in their annual reports in an endeavour to regain their legitimacy. Organisations make strategic use of the disclosures to manage society's perceptions about their crisis, to legitimise their operations, and ensure their continued success (Deegan *et al*, 2000). In order to change the perceptions of the public, O'Donovan (2002) showed organisations make use of distinct environmental disclosures. Cho (2007), on the other hand, found that organisation focus on one strategy: mainly image enhancement, where organisations portray themselves as "doing good" for example, creating job opportunities, to restore their image in line with society's social contract.

The social contract itself contains both implicit terms, which include non legislated societal expectations, and explicit terms, spelled out in the form of legal requirements (O'Donovan 2002). In developing countries, legislation requires an increased level of environmental disclosure but a considerable (and increasing) volume of information is presented on a voluntary basis. This suggests that although sustainability reporting has become an increasingly significant global issue, more so in the developing world, a large part of it is still not legally enforceable due to lack of legislation. Hence, it can be argued that currently, the quality and extent of environmental disclosures is dependent, for the most part, on the ethos of the reporting entity. Similarly since modern times law and morality in terms of societal values have become partially separated and law can no longer necessarily serve as a valid proxy for the socio-political legitimacy of national government, management can vary their interpretation of the explicit and implicit terms and their response to stakeholder pressure (King III, 2009)

South Africa has guidance on the publication of information regarding employment, the environment and social responsibility. Presently the Integrated Reporting Committee (IRC) has released an exposure draft to the public for commentary, dealing with enhanced principles for integrated reporting (Integrated Reporting Committee hereafter referred to as the IRC, 2011). Although such guidance exists, no monitoring or enforcement system has been put in place to establish the extent to which organisations are following the guidelines.
Furthermore, there exists no legislation to enforce their use. While the IRC has released its proposed framework, there is still no formal adoption of it and it does not, in itself, carry the legal force of law. Accordingly, decisions over whether to disclose, how much to disclose, and what type of disclosures to make, are almost entirely those of the organisation.

In an effort to understand the motivation of South African mining organisations in providing voluntary environmental disclosure this paper examines the extent to which voluntary disclosures signify an attempt to close a perceived legitimacy gap (Suchman 1995, Campbell, Caraven and Shrives 2001 and O'Donovan 2002) in order to gain, maintain or repair legitimacy between the mining industry and its relevant constituents. The effect of organisations' perceptions of legitimacy threatening factors supplements the traditional understanding of legitimacy as it pertains to environmental disclosures (Campbell *et al*, 2001).

There are indications that suggest that environmental disclosures in the annual report are subject to management interventions (O'Donovan 1996). On the other hand, research on the factors that persuade or prompt management to present environmental disclosures has been more limited (see Tilling and Tilt 2009). The legitimacy theory was adopted by various social and environmental accounting researchers, many of whom claim to "assess" legitimacy and find support, or limited support, for the notions they encompass (Ahmed and Sulaiman 2004 p.1). The legitimacy theory does however seem to be able to provide valuable insight into the extent and type of environmental disclosures made by organisations. In other words, there seems to be some cases where an organisation will voluntarily disclose social and environmental information to obtain support from the community and environmental groups, and to reflect the image of being socially and environmentally responsible (Deegan, Rankin and Tobin 2002, Magness 2006). It should be noted that most of the above research has been conducted in the context of developed countries. A question arises as to whether the legitimacy theory can also be applied to explain environmental disclosures in the annual reports of organisations in an emerging economy.

In view of the relevant nature of environmental reporting, specifically the legitimacy theory, this study will carry out an exploratory analysis. It will show the nature and scope of environmental disclosures made by certain listed South African mining organisations. This study will focus on establishing whether these organisations appear to be influenced by similar motives to gain societal approval in making voluntary environmental disclosures within their annual reports and media disclosures after an environmental crisis.

1.2 Problem Statement

In light of the increased public interest in environmental issues, organisations are tasked with challenging disclosure decisions. An event that affects a wide variety of stakeholders would serve to provide insight as to how management come to a decision as to what to disclose to reduce threats to their legitimacy. Prior research has not explored these disclosure decisions taken by organisations that face an environmental crisis.

Mining organisations have a visible and evident impact on the natural environment. It is therefore to be expected that these organisations will most likely come under scrutiny from environmental groups and other concerned parties. This public pressure tends to have the effect of questioning, among other aspects, the legitimacy of the aims and operating procedures of mining organisations. The notion of legitimacy suggests that organisations will not be able to succeed without considering the impact of their actions. They will be inclined to make use of all the means at their disposal, including environmental reporting, to legitimise themselves.

The research problem stated in this paper is to identify whether, after an environmental incident has occurred, mining management will increase environmental disclosures and whether the increase in the disclosures indicates legitimisation strategies employed by management.

1.3 Research Questions

To explore the expectation that mining organisations appear to be inclined to make particular environmental disclosures when their legitimacy is threatened two research questions were posed. Assuming that a mining industry's legitimacy is threatened, one way to restore legitimacy is to increase the environmental disclosures in the organisation's annual report. The use of symbolic environmental disclosures will address the concerns of the various stakeholder groups and might redirect the negative impact of actions and media publication s(Deegan *et al*. 2002). Various literature have used the legitimacy theory to suggest that environmental disclosures are linked to management demonstration that they are operating in an environmentally responsible manner. Organisations provide environmental disclosures to provide information about organisational activities unknown by the public to downplay negative environmental incidents, draw attention to past corporate achievements and offset negative news publicised by the media(Deegan and Rankin 1996, Lim, Wilmshurst and Shimheld, 2009, Wilmshust and Frost 1999).

After Suchman (1995) it is hypothsised that the South African mining industry, as a response to acid mine drainage which threatens legitimacy, the mining organisations will respond to legitimacy threats by increasing the level of environmental disclosures.

1. Has the level of mining organisations' environmental disclosures increased after the acid mine drainage crisis?

An additional analysis will also be undertaken where the organisation;s communication strategies for their environmental disclosures will be examined. This will be undertaken to identify any pattern or trends that could further explain the actions taken by the mining organisation in regaining legitimacy.

2. What legitimacy strategies has the mining industry put in place to manage legitimacy challenges and the relationship with their critics?

1.4 Significance of the study

The contribution of this study is important for various reasons:

The research will firstly suggest whether the legitimacy theory can, in fact, be utilised to explain environmental disclosures in annual reports. Such valuable insights can provide a base for future research and development in the area of environmental reporting, more so in the often neglected context of a developing country.

Secondly, the study makes use of a content analysis methodology. This research methodology was described by Matthews (1997) as useful to provide a depiction of the state of disclosure. To quote, Mathews (1997 p.504) argued that "continuing with the tradition of empirical research aimed at documenting and analysing what is disclosed in the areas of environmental accounting is valuable as a record of the current state of organisational disclosure and, therefore, of the distance that remains to be travelled along the path to full accountability by economic actors." The study will help to promote and develop the content analysis method in accounting and finance by reducing its subjectivity and making it capable of replication.

Thirdly, investigation into management strategies regarding media environmental disclosures will provide valuable insights as to why organisations put together voluntary environmental disclosures. Furthermore, when deciding whether to make environmental reporting mandatory, these findings will be beneficial to South African authorities.

Finally, the study will supply some descriptive data regarding the coverage and range of environmental disclosures in South African annual reports. In this area, previous research has largely neglected in examining developing countries.

1.5 Purpose Statement

In this paper, a qualitative and quantitative approach is taken to examine the environmental disclosure decisions and practices of the South African Mining industry after the acid mine drainage incident occurred. The objective of this paper is to examine the annual reports of each of the mining organisations over a period of three years and identify whether there was an increase in the environmental reporting of the various mining organisations specifically after the acid mine drainage occurrence or not. Organisations disclose a diversity of information which is not mandatory therefore, implying that they employ discretion with regard to the information about which they have knowledge (Verrecchia, 2001).

Firstly, this study is aimed at examining the extent of voluntary environmental disclosures in the annual reports of South African organisations in the mining sector.

Secondly, this study attempts to establish whether the environmental disclosures can be explained by the concept of a social contract and legitimacy theory by assessing the media press disclosures against a legitimacy coding matrix.

Finally, it aims to investigate whether the legitimacy theory is an appropriate basis/motivation to try to explain voluntary environmental disclosures in the context of a developing country.

1.6 Research Design

The study is set in the context of 2010, following the millions of highly acidic litres of mine water filling up abandoned mines under the Witwatersrand area. Acid mine water is created underground when old and unused shafts and tunnels fill up. This occurs when water oxidises with the sulphide mineral iron pyrite. The water subsequently fills the mine and begins to decant into the environment, in a process termed acid mine drainage (Miningweekly.com, 2010). Mining Weekly (2010) found that in the Krugersdorp-Randfontein area earlier in 2002, acid mine drainage had begun to decant from the Western basin. The seepage only increased in 2010; this led to it being declared an environmental emergency. Some environmentalists and scientists went as far as to compare it to what is considered to be one of the most devastating human-caused environmental disasters, the Exxon Valdez oil spill, in terms of possible long-term environmental and health consequences (Chatterjee, 1995).

After the accident occurred, major efforts were made to address and manage the problem. These efforts were intensified by the various responsible and relevant government departments, namely; the Department of Mineral Resources (DMR), Department of Water Affairs (DWA), Department of Environmental Affairs (DEA), and the Department of Science and Technology (DST) (Inter-Ministerial Committee hereafter referred to as IMC, 2010). Currently the main concern is that the mine water could possibly decant into the Witwatersrand area, which poses severe potential environmental and health safety impacts on the receiving water environment and connected surface areas (IMC, 2010). It can be safely concluded that this unfortunate incident not only challenged gold mining operations in the central basin, it also sparked both management and stakeholder concern for the whole industry.

During this acid mine drainage crisis certain events occurred that made the public seriously question the mining industry's actions and the legitimacy of its operations. Such an event made institutional investors, whose interests commonly include a variety of social matters, focus, at least temporarily, on environmental issues. Mitchell *et al* (1997) argued that exigency is a critical factor for an issue to warrant management attention. One of the tenets of the legitimacy theory is that organisations make use of disclosures to communicate information relating to how they deal with matters of significant interest to stakeholders: this incident therefore provides a setting for an examination of the correlation between legitimacy and environmental disclosure. Whenever there is a demand for information related to environmental risk and its management, managers' response can be measured by items it disclosed in the annual report, depending on the organisations' legitimacy strategies.

The study is a quantitative one using a detailed legitimacy matrix as the data collection instrument. The environmental disclosures of a purposefully selected sample of JSE mining listed organisations were inspected in detail, and media releases and annual report disclosures were assessed according to the coding matrix. The coding matrix categories and descriptions were those obtained from the extant literature, namely Suchman. This study utilises mass media framing of activities and communication of South African mining organisations as its standard when exploring the organisation's use of the legitimacy management approach employed during the acid mine drainage crisis.

At the close of trading on 15 December 2009 and 15 December 2011, mining organisations were selected from the BFA McGregor database of JSE listed organisations. Contrasting data was compiled into meaningful information using the framing method. Goffman was the first to apply this method (1974 as cited in Simon and Xenos, 2000). In recent times framing has been applied in the social sciences to better understand areas that include the role of journalists and to analyse political communication. Framing is defined as 'a central organising idea or story line that provides meaning to an unfolding strip of events, weaving a connection among them' where 'the frame suggests what the controversy is about, the essence of the issue' (Gamson and Modigliani, 1987, p. 43, as cited in Nelson and Kinder, 1996). From a more structural perspective, Entman (1993 as cited in Nelson and Kinder,1996) defined framing as the 'process by which a communication source, such as a news organisation, defines and constructs a political issue or public controversy' (Nelson, Clawson and Oxley, 1997). Nelson *et al* (1997) argued that frames reduce the complexity of an issue by narrowing the discussion to only one or two central aspects.

From the initial analysis of media coverage, this study will make use of three 'working frames' that show the continued development of the issue. The 'working frames' are:

1) Radioactive waste spillage/ acid mine water flowing into wetland.

2) Formation of the Inter-Ministerial Committee.

3) Treatment of acid mine drainage.

The 'working frames' were founded on reviews of important media themes as well as Suchman's argument that 'legitimacy is dependent on a history of events' (1995, p.574).

Based on these 'working frames' a content analysis has been structured. South African mining organisations' actions and communication as reported in and by the media, against Suchman's legitimation strategy matrix. Operational definitions for each code are based on Suchman's (1995) research. *Refer to Table 1*

Content analysis is undertaken of mining organisation's annual reports to ascertain the quantity of environmental disclosures, undertaken in each year, to enable a comparison of before and after impacts on disclosure and to measure both media attention and corporate social disclosure. Disclosure in annual reports imposes various costs related to collecting, quantifying, verifying and publishing information (Cormier & Magnan 1999), therefore management may allocate space to disclosures that are perceived as important in managing their legitimacy. Krippendorff (1980, p.21) defines content analysis as a: "method of codifying the text (or content) of a piece of writing into various groups or categories depending on selected criteria." According to Krippendorff content analysis relates to "a research technique for making replicable and valid inferences from data to their context."

Frazier, Ingram and Tennyson (1984) state that categories used in content analysis should result from a systematic application of a set of rules to identify exhaustive and mutually exclusive categories. Accordingly, in order to draw valid and reliable inferences from the measurement process, the method suggested by Weber (1990) to create and test a coding scheme has been followed. The coding rules are developed in detail to yield standard classifications over each of the annual time-periods of this paper.

First the recording units are defined. The reliability of different measures of environmental disclosure has received much attention in the literature. However, most of the research in this area has focused on either the financial statements or some other component of the annual report. Little research has content-analysed company press releases that are neither audited nor preread by the external auditors. This study used both content and discourse analysis as discourse analysis allows for the study of larger linguistic units such as media texts (Fairclough, 1995; Shriffi n, 1994). Miles and Huberman (1994) presented 13 tactics for drawing conclusions from qualitative data.

Our analysis incorporated counting the volume of communications (i.e. . number of environmental word disclosures) in the annual reports as well as reviewing either the optimistic language in the media articles (e.g., 'new', 'potential', 'satisfied', 'pleased', 'rebuilding', etc.) or the factual and forthright language (e.g. mentioning going concern issues or possibility of mining closure or contamination of drinking water) of the release. Using metaphors is another tactic that involves pattern-making and was particularly useful in classifying the tone of the releases into categories such as optimistic, realistic, aggressive, and deceptive.

It is assumed that the quantity of words represents the level of importance that management places on a certain issue being addressed and the level of responsiveness to legitimise their operations. The focus on the corporate annual report is consistent with previous corporate social reporting studies (Deegan& Rankin 1996, Brown and Deegan 1999; Deegan *et al*. 2000) since the annual report is the main form of an organisation's communication, particularly in the case of publicly listed organisations (Neu *et al.*1998, Lim, Wilmshurst and Shimheld, 2009). It is also widely acceptable by the public in comparison to other corporate reports (Wilmshurst and Frist 1999, Lim, Wilmshurst and Shimheld, 2009). Previous studies also indicate that various stakeholder groups consider the annual report as their main source of an organisation's social and environmental information (Tilt 1994, Deegan and Rankin 1996).

For media articles, coding descriptions and examples were developed using Suchman's (1995) framework for legitimacy strategies. For example, to illustrate his meaning of repairing pragmatic legitimacy, Suchman suggested that 'managers may attempt to deny the problem, hoping to allay constituents' pragmatic concerns, at least until the organisation can assemble a compensating side payment' (p.598). Therefore, media statements related to denial strategies were coded under this category. As a second example, Suchman's meaning of building cognitive legitimacy through institutional strategies of popularising new models was demonstrated through these examples: 'lobbying, advertising, event sponsorship, litigation, and scientific research' (p.593). Statements related to such activities were coded under this category.

Before coding, the instrument was tested against the code descriptions provided by Suchman (1995) and Patel (2005). Data was coded by one independent person, with two reliability checks performed by the original coder. A random sample of articles was recoded both during and after the coding process.

1.6.1 Sample selection

South Africa's mining history has generated vast economic benefit and still plays an important role in ensuring the country's position in the global market (Kearney 2012). However, large scale mine closure since the 1970s has become a major concern for stakeholders and governing authorities. But mines have been a cause of concern on a global scale, especially due to the fact that they display poor environmental and water management. In the case of the mines along the Witwatersrand, acid mine drainage (AMD) poses a particular problem.

It is impossible to overlook the effect that the mining industry has had on the environment. Thus, it is not a surprise that it has come under scrutiny by the stakeholders. In addition to the stakeholder's perspective, environmentalists believe that the mining industry will have the most negative effect on the environment (Elkington, 1994). In addition to operating in environmentally sensitive industries, being politically visible and large, each of the mining organisations have been affected by the acid mine drainage crisis.

Organisations from mining sectors were selected due to the recognised environmental impacts of this sector. Due to the absence of reporting protocols for private organisations and lack of access to their annual reports, only listed mining organisations were included in the sample. The analysis was carried out over a three-year review period from 2009 to 2011 to identify trends in the frequency and nature of environmental disclosures. Data was collected from annual reports and media press releases. The instrument allows for data collection from a geographically dispersed population, and for the standardization of the frequency and nature of disclosures to facilitate comparison and analysis (Saunders, Lewis *et al*. 2009).

1.6.2 Data

One newspaper database, *The Chronicle,* was chosen to represent mass media as a detailed source of content from which to explore the research questions. Chronicle represents an environmental database providing access to several media sources, including mainstream presswires The following media sources are incorporated into Chronicle: Greenearth consulting, News24, Fin24, SA labour news, SA news, Mining weekly, Simplygreen and engineeringnews etc. *The Chronicle* would act as a representation of the national news agenda, and in addition it would provide a more comprehensive overview of the type of news that was available in the financial press. *The Chronicle* database was used, and the following terms were entered into the search box: Acid mine water", "Rising acidic water" and "Acid mine drainage". 102 clippings were identified. *The Chronicle* is one of many similar websites that **The Custodian Project** supplies, with the key focus being on environmental issues. *The Chronicle* not only discusses topics centred on the environment, but also places emphasis on conservation initiatives, some of which include biospheres, rehabilitation centres and NGO's. Any events that fall under the category of 'conservation' or 'environmental' are published. The start date for the event is the first "media clipping" published, selected to identify the beginning of reporting on the Acid mine drainage and the enquiry into the affected areas. The end date reflected the reporting of the results of the acid mine drainage treatment. A sentence was used as the mode of analysis and each individual sentence was regarded as a unit of the analysis. A coder was then used to examine every sentence and the ones with legitimate strategies were identified. The code would then be placed within a specified coding category.

Stakeholders have also indicated that they would like their annual reports to include environmental information. According to De Villiers (1998: 159), South African managers, auditors and clients want to see more environmental information in their annual reports, especially because of a shift towards more 'green' practices.

In addition, management should have editorial licence over the content contained within the annual report as this will most accurately represent the views of the firm (McMurtrie, 2006, p.4). The annual report should not be the sole source of disclosure. Instead, organisations should rely on a number of sources, including the internet and reports focused on specific topics. In this particular case study, the annual report was used as the sole source of information for numerous reasons. But one of the main reasons it was used was that it is very easy for researchers to access the information, as annual reports are freely available to the public for viewing (McMurtrie, 2006, p.3). McMurtrie (2006) also says that all organisations which trade publicly are obligated to produce an annual report, as this ensures that all organisations maintain a level of consistency.

When it comes to analysing social responsibility information disclosure, studies depend on the annual report as their primary source of information. This reflects the relevance that annual reports have in the industry, as well as being one of the most accurate reflections of the opinions that are upheld by the stakeholders of a particular organisation. (Branco and Rodrigues, 2006, p.235 as cited in Cunningham 2010). In addition, Neu *et al* (1998, p.269) states that with regard to discussions centred on environmental disclosure, the annual report "provide[s] organisations with an effective method of managing external impressions". The reason for this can be attributed to the fact that it possesses a high level of credibility which sets it apart from other forms of corporate media.

Assumptions

An assumption is made by the researcher that the data to be downloaded from the BFA McGregor database is accurate.

1.6.2.1 Scope and Potential Limitations

Despite the importance of annual reports, there is no legal document in place that requires private organisations in South Africa to provide a sustainable report, or to make their reports public. Thus, in order to ensure this study's accuracy, only organisations listed on the JSE (JSE Securities Exchange 2009) will be included. In addition to this limitation, there are other limitations to take into account. This report does not:

- Attempt to provide the reader with information detailing the importance of environmental reports;
- Specifically identify efforts made by organisations and organisations to reduce their carbon footprint; or
- Provide a comprehensive list of organisations, thus limiting overall conclusions and generalisations that can be deduced.

1.6.2.2 Delimitations

This particular study focuses on the reports of 43 listed South African mining organisations. The following aspects will be investigated:

1. Materials
2. Energy
3. Water biodiversity
4. Emission, effluents and waste

1.6.3 Corporate Environmental Disclosure (CED):

CED is the external communication of environmental issues relating to the policies, activities, undertakings of an organisation disclosed through the corporate annual report.
This definition has been taken from corporate social reporting (CSR) literature. There is already a plethora of definitions that has been provided for CED, some of which include Social Responsibility Reporting', 'Social Accounting' and 'Corporate Environmental Reporting'.

Despite all of the definitions that have been provided, there is a general consensus that CSR wants organisations to disclose their social activities in financial, non-financial, quantitative and qualitative terms. The word 'social', in this context, is used to describe the interaction between organisations, societies and the environment within which they function. It considers not only the organisations economic activities but also human resources, employee relations, community engagement, ethics and environmental issues. Such a perspective arises from the recognition that "all economic organisations operate within a larger social environment and for the purpose of serving the needs – economic, human and social – that arises therein" (Dierkes and Preston 1977 p.3 as cited in Hibbitt 2004, p.17).

Social responsibility disclosure has been broadly defined as the "process of communicating the social and environmental effects of organisations' economic actions to particular interest groups within society and to society at large" (Gray *et al*., 2001 p. 329 as cited in Hibbitt 2004 p.160). It thus highlights particular social and environmental aspects that are affected by a particular organisation's actions. It also looks at employee-related issues, community involvement, environmental concerns, and other ethical issues. Social responsibility disclosure simply put refers to how an organisation interacts with society.

CSR can be defined as "information relating to an organisation's activities, aspirations and public image with regard to environmental, community and consumer issues" (Gray *et al* 2001 p.329 as cited in Hibbitt 2004, p.160). This definition highlights three key aspects of CSR:

(i) It details the process of maintaining the information and communication of an organisation in a variety of forms and through various media channels.

(ii) The concerns stretch beyond simple communication-related issues. It also focuses on the organisation's goals, objectives and ambitions. Therefore environmental information can thus take a variety of forms, including descriptive, non-monetary quantified data and monetary data.

(iii) The word 'environment' encompasses a variety of definitions. It is also used to refer to employer/employee relations, energy issues (such as efficiency, usage) as well as health and safety.

1.7 Chapter Outline

The report will be structured as follows:

Chapters 2 and 3 provide the structured definition phase. Chapter 2 seeks to place the present study in its historical, political and social context. This chapter looks at a review of some of the significant developments and trends in corporate environmental reporting, together with background information of the Acid Mine Drainage incident. Chapter 3 provides a review of the prior research into the nature and cause of corporate environmental reporting. Chapter 4 deals with the research design and the coding matrix that has been used, and then followed by the results section, and a discussion. The discussion provides an explanation of the results in relation to prior literature. It also includes an analysis of the implication of results on the mining organisation's relevant public groups. The paper is concluded with an examination of the limitations, and potential future research identified from the findings of this study.

Chapter 2: South African context and background: Acid mine drainage

2.1 South African Environmental Issues

South Africa has been inhabited by people for the past 8,000 years. These people have survived on natural resources, using them as food, shelter and energy. Over the past years, the ways in which the resources have been used has been changing, but this last century has shown the greatest change as a result of a spike in population growth. The interaction between people and the environment is inseparable and cannot be looked at in isolation as societies are dependent on the environment for their survival (Department of Environmental Affairs and Tourism hereafter referred to as DEAT, 2008 p.1).

High poverty rates, high levels of illiteracy and unemployment, and unclear patterns of resource use and waste generation represent the various factors resulting from political, economic and social inequalities (DEAT, 2008 p.2). There have been recent political developments that acknowledge environmental issues with regard to the environment's capacity to meet society's basic needs and adhere to sustainable guidelines. The aims of these developments include trying to redress the inequalities in South Africa and to improve the quality of life of all South Africans (DEAT, 2008 p.2). The rapid growth of the population, however, needs to be monitored as it is a critical factor in whether such strategies can succeed.

At the moment the focus in South Africa is to meet basic human needs. Basic needs include people having access to water supply and sanitation, electricity, proper housing, and healthcare. It should be noted that the Constitution has been changed to reflect the interests of all sectors of the population, create empowerment of individuals and communities, and to uphold the rights of humans and the environment (DEAT, 2008 p.3).

The pressure currently being exerted on the environment can be attributed to the following social changes:

2.1.1 Population and demographic change

Currently the population of South Africa is structured such that roughly 50% live in urban areas and 50% live in informal settlements with poor housing. Basic needs aren't satisfied, such as access to water supply, sanitation and electricity in both rural and urban areas. The population has also become more mobile now compared to a century ago, and factors such as the need for better employment opportunities, land reform and restitution policies implemented by the government, as well as immigration from other African countries are drastically increasing the population growth in urban areas (SoEGuide 2003,www.environment.gov.za/soer/resources/soeguide.htm).

This can be evidenced by the fact that in 1996 the population in South Africa was 40.6 million and was growing at 2%. If it continues to grow at this rate there will be nearly 82 million people living in South Africa in 2035. This number of people is dependent on the same natural resources that are currently under pressure to support the population as it currently stands (DEAT 2008, p.1). The increased migration to urban areas leads to an increase in the strain put on the natural resources and, in addition to that, the environment has to take an increased amount of waste, emissions and pollution that is caused by an increase in population. These concentrated pressures on the environment lead to a setback in sanitation, pollution and to crime, which will have a direct effect on human health and thus quality of life (DEAT 2008, p1; p3).

2.1.2 Social and Economic development

Natural resources have also been pressurised by the differences in the standard of living amongst South Africans. It appears that individuals who are better off will consume more resources and generate more waste on a domestic and commercial level (DEAT 2008, p.3). An example would be how affluent people will use more resources such as energy and water, as well as commercial agricultural and industrial development to transform natural habitats and generate waste pollution. On the other hand, the poor exert pressure on the environment by cultivation of land that is unsuitable for use, such as overgrazing the grasslands and removal of large quantities of forestry for use as fuel in their homes. The mitigation of poverty is a priority for the achievement of sustainable development on a national and international level (DEAT 2006, p3). However, in the reduction of environmental degradation, changing the lifestyle of the wealthy to become less customer-orientated and wasteful is an equal goal.

2.1.3 Changing values and beliefs

In the behavioural and social sciences, the term “values” indicates the underlying system according to which people judge what behaviour is acceptable and distinguish between what is right and what is wrong (DEAT 2008, p.4). In the past, people were based in rural areas which meant that they were in close contact with the environment and, as they moved away, they would lose that continuous contact with nature. The more people move to urban areas, most of which are a consumerist setting, the more they forget the value of protecting environmental services such as water resources. Although the urban society tends to forget that environmental integrity is necessary for their survival (DEAT 2008, p4), the urban society has a higher level of power over organisations, and organisations privilege the power in their disclosures. The urban society are more likely to be the financial stakeholders, and organisations see financial stakeholders or government regulators as more important, because reduced investment by financial stakeholders or increased regulation by government can impose significant costs.

While the notion of legitimacy implies the "acceptability of an organisation's operational activities", it is not really that helpful in assessing how it might work in the South African setting, with the current pressures described in the preceding paragraphs. To this end it is linked to a social contract, an approach to identify how this "acceptability" might be shown. The notion of a social contract is critical in the concept of organisational legitimacy, to explain the social obligations of South African organisations. The social contract contains explicit terms, made up of legal requirements and laws which reflect societal norms and values, since concerns raised by society are analysed through the public statements of Policy arena and if deemed necessary, enacted into laws (Patten 1992, as cited in Lim, Wilmshurst and Shimeld, 2009).

2.2 Explicit and Implicit terms per the social contract

Environmental reporting has attracted interest in South Africa since the year 2000 as evident by the establishment of two separate environmental reporting award schemes. The World Wide Fund Environmental Annual Report organisation has annual awards for the best separate environmental reports, and KPMG, in conjunction with the University of Pretoria, has awards to the JSE, based on environmental disclosures in the annual reports (De Villiers and Barnard 2000, p.15). Ever since the 2003 World Summit on Sustainable Development in Johannesburg, the quest for sustainability has captured South Africa's imagination, pointing to a plethora of social and environmental legal considerations (Van de Ende 2004 as cited in Dickenson *et al* 2005). The South African government, in an attempt to consider inadequacies in environmental legislation, has launched several coexisting environmental policy processes. These include the Consultative Process for an environmental Policy for South Africa (RSA 1996c), the Draft Environmental Impact Regulations (RSA 1996d), the Minerals Policy Process (RSA 1996e), the Water Law Review (RSA1997a) and the Integrated Pollution Control and Waste Minimisation Project (RSA 1996b) (DEAT 2006, p.4).

Corporate environmental reporting has also undergone a change in the focus of its content. This reflects a similar shift in the use and management of information within an organisation's structure. It is difficult to pinpoint any particular reason behind the shift, but the drive is most likely the emerging philosophy of corporate governance and accountability (DEAT 2005, p.1). The shift in focus is illustrated in Table 1. The shift illustrates that stakeholders will no longer passively accept information or part-information. They want to engage organisations on data and question the reliability and relevance of environmental and other reports (DEAT 2006, p.4).

Original Focus	Emerging Focus
One-way passive communication	Multi-way dialogue
Inputs and outputs	Impacts and Outcomes
Verification as an option	Verification as a standard
Single company progress reporting management system	Benchmarking, life-cycles, business deign, strategy
Ad hoc operating standards	Global operating standards
Public Relations	Corporate Governance
Voluntary Reporting	Mandatory Reporting (King III Apply or explain)
Company determines reporting boundaries	Boundaries set through stakeholder communication
Environmental performance	Triple Bottom Line

Table 1. South African Corporate environmental reports' shift in focus (Agrifood UNEP 2000 as cited in the DEAT 2005 p.2)

The formalisation of corporate environmental reporting and its successors in South Africa began with the issue of the South African Institute of Directors' "King Report on Corporate Governance for South Africa 2001". The set of guidelines, in addition to publishing minimum standards for governance by South African listed organisations, also tackled non financial disclosures that should be made, such as health, impact of HIV, safety, environment, ethics, and social issues (DEAT 2005, p.5).

International agreements and national legislation policy is in support of the environmental reporting on the sustainability mentioned above; however, there is no explicit legal obligation to produce an environment report in South Africa. The main motivation for a sustainability report should not be compliance alone, but rather to benefit governance and local authority performance towards sustainability. Regardless, the following constitutes some of the supporting legislation and the landmarks in the disclosure on environment management (DEAT, 2006 p4).

2.2.1 Constitutional imperatives

Section 24 of the South African Constitution provides the nation with the right to an environment that is not detrimental to their health or well-being, and to have the environment protected for the benefit of present and future generations. Section 32 states that the general public are entitled to information held by government. Schedules 4 and 5 give local authorities certain specific responsibilities for aspects of environmental management.

A commitment named Local Agenda 21, signed in Rio de Janiero at the United National Conference on Environment and Development (UNCED), also represents an initiative in which an internationally agreed upon pledge to sustainable development is made. Local Agenda 21 is the chapter in the Agenda that describes the role that local government should play in the implementation of Agenda 21. South Africa's Constitution incorporates the Local Agenda 21 requirements of co-operative governance, and promotion of a safe and healthy environment (DEAT 2006). This means that the Municipalities are committed to implementing the Local Agenda 21. This commitment arose as a result of former president, Thabo Mbeki, reaffirming South Africa's commitment to Agenda 21 at the World Summit on Sustainable Development in 1997(DEAT 2006).

The DEAT (2006) prescribes the responsibility of the government in the implementation and application of Agenda 21, calling for collaborative development of the following values:

- Integration of social, economic and environmental issues
- A multi-sector approach
- Concern for the future
- Recognising and working within ecological limits
- Developing partnerships with civil society
- Linking local issues with global impacts
- Equity, justice and accountability.

2.2.2 National Environmental Management Act (NEMA), 107 of 1998

In South Africa, the National Environment Management Act (NEMA) is the most powerful piece of legislation that has been passed in support of Sustainability reporting. This Act encourages more proactive, cooperative and appeasing environmental management. Section 31 of the Act says that every citizen is entitled to have access to information held on the "state of the environment and actual and future threats to the environment, including any emissions to the water, air or soil, and the production, handling, transportation, treatment, storage and disposal of hazardous waste and substances". Sustainability of Environment reporting results in the provision and distribution of some of the information required to meet this right (DEAT 2006).

2.3 Background: Acid Mine Drainage

South Africa's situation is unique in that it has to combat several other challenges. These include land degradation, limited resources and, most dangerous, acid mine drainage (AMD) (Azarch, 2011, p4). Ecologically, South Africa's water security is threatened, while economically, it is driven by the powerful mining industry (Department of Environmental Affairs, 2007). These two trends have contributed to the rise in the country's water acidity, which has far-reaching consequences on the surrounding communities and ecosystems that border the Vaal and Limpopo Rivers. As a result, our agricultural and industrial industries are endangered.

South Africa's mining industry is one of the most developed worldwide, largely due to the industry's access to several resources. "These range from 80% of the world's manganese, 41% of gold and close to 90% of the platinum, and is the fourth largest producer of diamonds" (South African info, 2008 as cited in Azarch 2011). South Africa's mining history has contributed to the building of the economy, and it has also played an essential role in our country's development. It also helps maintain our position as contender in the global markets (Corcoran 2011). South Africa's gold mining industry flourished in the 1880s. Not only did it provide a new means of generating an income for many individuals, it positively impacted both our industrial and agricultural sectors (Cobbing, 2008 as cited in Azarch 2008). Despite all of these benefits, the presence of acid mine drainage (AMD) proves that ecological damage has taken place.

Studies indicate that the mining industry uses roughly 6% of South Africa's total water resources (Sonjica 2010 as cited in Azarch 2011). This means that as an industry, it needs to be considered when looking at our nation's water sector. It is also ironic to note that while the mining industry is playing an integral role in improving the water situation, it is also the reason behind the problem. Keeping this in mind, preventive measures could have been implemented before the problem became so severe, especially if the mining organisations had worked with the government to manage the ecological damage. However, in the past, the government has not managed to hold mining organisations accountable for their actions, and this problem has followed us through to the present. With no way of ensuring accountability, the problem has continued to escalate.

As much as 36 million cubic meters of AMD is currently seeping into the water systems of surrounding communities (Cobbing, 2008 as cited in Azarch 2008). Not only is it posing a threat to communities but it is also affecting world heritage sites, like the Cradle of Humankind. This will then in turn not only impact industrial centre's found in the Johannesburg's Central Business District and South Africa's water supplies, but will also impact the South African tourism industry, so the effects need to be contained and addressed. In Gauteng, the Witwatersrand has the highest and most severe case of AMD (Corcoran, 2011).

According to Miller (2001, p5), harmful underground metals are unearthed at a much higher rate in areas where mining organisations operate. Metal mines produce rock waste and mine tailings. The mine tailings are larger than the undisturbed rock. The process of extracting metals from the ore involves crushing the ore into a mud slurry. Some of the particles can be so small that they are less than 50 millionths of a meter. This ensures that the overall surface area increases by a factor of 100 00, thus the rate of acid formation increases (Miller, 2011, p5) When sulphide minerals mix with the underground water, acid is produced. It becomes known as AMD when the underground water surfaces from abandoned mining compounds (Zeelie 2010). The danger occurs when this water combines with drinking water.

Recent studies indicate that by 2015, approximately 80% of South Africa's drinking water will be undrinkable (Water sense, 2010 as cited in Azarch 2011). This water also reveals traces of uranium, which provides a serious health hazard to human health. The potential volume of AMD for the Witwatersrand Goldfield alone amounts to an estimated 350ML/day (1ML = 1000m3). This is equivalent to 10% of the daily amount of water that the Rand Water supplies to the communities in the Gauteng Province which costs about R3000/ML (Mandres, Godfrey and Hobbs, 2009 as cited in Azarch 2011).

AMD is becoming increasingly problematic, especially because acid generation is extremely difficult to contain. It can also stay in a particular environment for many years, even after all of the minerals have been depleted (Miller, 2011 p.5). Although mines have attempted to address the problem with informal methods, the problem is complex, and the effects too widespread. The Western Utilities Corporation, in order to address the issue on a national level, is in the process of devising a mine water treatment strategy. This plan is based on the model designed by the Emalahleni Water Reclamation Plant in Mpumalanga. This plant treats up to 25ML of acid mine water per day (Mandres, Godfrey and Hobbs, 2009 as cited in Azarch 2011). After the treatment process, the water is once again safe to drink, and it no longer has a negative impact on the surrounding ecosystems.

AMD is not something that can be solved in the short-term, nor is it something that can be treated from a single act of intervention. Instead, a more comprehensive approach that integrates a number of strategies is what society expects, for example, active water treatment (as modelled by both the Emalahleni and WUC plants), passive water treatment (like constructing wetlands), controlled placement of acid-generating mine waste, and prevention of water ingress into mine voids and of AMD loss from mine voids. Despite all these strategies communicated to the public, about 62ML spewage from coal mines and 50ML/day of AMD is discharged into the Olifants River Catchment, which contaminates the water that is used for irrigation and municipalities (Nelson, 2010 as cited in Azarch 2011). Thus, further action needs to be taken.

2.3.1 A response from the mining industry

Acid Mine Drainage is not a new problem but its effects have become increasingly severe after being swept under the carpet by government and mining officials alike. For many years, mining industries have been aware of the problems associated with AMD, and as a result they submitted a Strategic Water Management Report Plan to Parliament (Wait 2010 as cited in Azarch 2011). Under the guidance of the Department of Water Affairs and Forestry, the mining industry attempted to address the problem but their efforts were not successful (Enviroadmin 2010).

Quite simply, dealing with this problem would have adversely financially affected the mining industry and the government; however in recent years, the environmental database Chronicle along with other environmental organisations have brought this issue to the fore and brought it into the public eye and only after several years of these efforts is the issue now seeing international attention, rightly so. The media have done their part by providing extensive coverage on the matter and fostering public awareness. Key individuals in both the public and private sector have voiced their opinions on the matter, and there is a call to the general public to help participate in finding a sustainable solution. Government has also taken an active role by launching a committee, with the purpose of assessing the crisis and producing a report detailing its findings (Zeelie, 2010). The report promised to include feasible solutions, while also reflecting the opinions of an expert panel.

The InterMinisterial Committee (IMC) worked in collaboration with Trevor Manual (National Planning Commission Minister), Pravin Ghordan (Minister of Finance), Naledi Pandor (Science and Technology Minister) and Susan Shabangu (Mineral Resources Minister) to address the problem of AMD (Zeelie 2010 as cited in Azarch 2011). One month after the IMC came into being, South Africa's Chamber of Mines decided to join them in their efforts to address AMD. It has offered to provide technological input with regards to pumping technologies, as well as attempting to alleviate AMD's harmful societal impact. Sadly, the mining industry is still not accepting the full blame for the problem, accusing government of displaying ineffective leadership by allowing the situation to degenerate. The process of treating AMD is extremely costly, and mining industries have suffered as a result. They are forced to turn to the government for help but they do not feel as if government is taking the matter seriously. On the other hand, overseas governments, like in the US, recognise the seriousness of AMD and the wider social and environmental implications. However, in South Africa only short-term solutions have been implemented but, as was previously mentioned, these solutions will not eradicate the problem. Thus, the importance of a long term solution can no longer be ignored.

Chapter 3: Theoretical Framework

As revealed in the prior chapters, the theoretical framework of this study draws on organisational legitimacy. Therefore, this chapter discusses this theory at length as it is used in the environmental disclosure extant literature. Organisational legitimacy is classified as being part of the social and political theories that have been used by various researchers within South Africa and abroad. Therefore, the start of this chapter entails a brief discussion of this group of theories. This will be followed by the definition of organisational legitimacy and legitimacy strategic perspectives.

3.1 Theoretical Perspectives

A practical classification of the theoretical perspectives is given by Matthew (1987 as cited in Tilt 1994). He had analysed various literature and grouped the three perspectives as "radical", "functionalist" and "interpretive". The radical perspective states that various institutions and conventional structures will shape what principles society has. For example the government, educational structures and religious communities will impact the morals and beliefs of the various communities (Tilt 1994).

The major theory discussed in most social accounting literature is the Political Economy Theory (PET), which entails "the political, social and institutional framework within which the economic takes place" (Gray, Kouhy and Lavers 1995, p.52). In this view environmental reporting is seen to provide political, social and economic meaning to stakeholders, as organisations attempt to further their own political agendas. This is where social disclosures and political policies interact to create and maintain financial and political ideals.

In several studies performed, organisations which seem to experience high amounts of political pressure may be seen to respond to this increased pressure by increasing the number of environmental disclosures. Environmental disclosures made by organisations exist not only to enhance the reputation of that particular organisation but form part of a bigger intention to change the allocation of society's scare resources. Politicians are aware of the fact that they can no longer ignore the need for sustainable reporting. This has been seen in the establishment of "The Green Party", The Green Alliance" and the "Environmental agency" parties (Guthrie and Parker 1990 p.172). Political associations also make changes to their political strategy in an attempt to include environmental policies and measures. There is also an indication that voluntary environmental disclosures are made to prepare or avoid future regulations. (UNEP 1996) In this way environmental disclosures can be seen as a form of political petitioning and represent a politically driven strategy.

Several authors have tried to test the legitimacy theory and found that it does not apply in certain societies within those countries. Yet in some countries researchers have found support for legitimacy theory and the concepts it entails (Ahmed and Sulaiman 2004 p.1). Where there is a large amount of political pressure with regards to environmental regulations and reporting/disclosure, the greater the increase in environmental disclosure from organisations (Guthrie and Parker 1990 p.172).

3.1.1 Marxian and Bourgeois Theory

Marxian theory has its roots in the in the philosophy of Marx and the idea that there conflicts within society. Marxian theory posits that organisations disclose information in order to receive more power or maintain their power with regards to politics and scarce resources (Gray, Owen and Adams, 1996). The power that is gained by organisations, as well as resources gained during a certain period, give organisations a feeling of control and security with regards to any challenges that they may face. In this way, what they disclose in environmental reports will differ, and their power to control scarce resources will be as a result of the social and environmental disclosures made (Gray, Owen and Adams, 1996). Furthermore these organisations like to display their profitability and their efficient use of resources, while still establishing the high power figure.

Tinker and Neimark (1987 p.2 as cited in Cunningham 2005) used the Marxian PET method when looking at various organisation annual reports. They argued that within a capitalist environment, any environmental information disclosed by an organisation is not merely made for image enhancement, but that those disclosures form part of a greater objective, being set out by management as an ideological instrument in influencing the distribution of scarce resources in order to ensure that the organisation is allowed to operate in the capitalist environment.

In contrast, the Bourgeois theory ignores the concept of structural conflicts within society, assumes that there are no structural inequalities and powerful groups competing for scarce resources (Gray, Kouhy and Lavers 1995b). This means that not all organisations rely on power, wealth or reputation in order to disclose information or save themselves from a wrong doing. Regardless of the wealth maximisation notion and financial goals of the organisation, environmental disclosures are necessary in order to interact with society (Gray, Owen and Adams 1996 as cited in Cunningham, 2010). Likewise, with the Bourgeois theory, the society is very important with regards to the mindset they have in order to accept certain environmental behaviour. Organisations need to be aware of what their actions may portray as well as the society's perceptions, and develop appropriate environmental disclosures in order to relay the correct message to their relevant publics.

3.1.2 Stakeholder Theory

The Stakeholder theory is based on managing and monitoring the constituents to which the organisation is accountable and the constituents who have opinions that matter with regards to the organisation's reputation and current status (Friedman 1962 as cited in Moir, 2001). At first shareholders were the only stakeholders, as an organisation's only primary goal was wealth maximisation. Over the years Freeman (1984) introduced an unlimited view of stakeholders which included creditors, environmental groups, employees and the government. Organisations were then seen as a body that represented the various links between the above stakeholders and management were then tasked with managing these stakeholders and setting strategies and goals in line with stakeholder expectations. Stakeholders are split between primary and secondary stakeholders (Clarkson 1995 as cited in Moir 2001). Primary stakeholders are the "ones without whose continuing participation the organisation cannot survive as a going concern". The secondary groups are defined as "those who influence or affect, or are influenced by the organisation, but they are not engaged in transactions with the corporation and are not essential for its survival" (Clarkson as cited in Moir 2001). Adopting this theory, environmental disclosures are seen as the communication by management to its stakeholders to gain support for its activities or any environmental policy initiated.

Stakeholder theory asserts that: "The organisation's continued existence requires the support of the stakeholder and their approval must be sought and the activities of the organisation adjusted to gain that approval" (Gray, Kouhy and Lavers 1995). The more powerful the stakeholders, the more the organisation must adapt (Gray, Kouhy and Lavers 1995). Considering the above definition when stakeholders have control over various resources, organisations are under considerable pressure to manage the organisation-stakeholder relationship. An organisation identifies its various stakeholder groups and will communicate certain information depending on the marginal benefit it receives from each stakeholder group. The stakeholder theory is similar to the concept of legitimacy, Gray, Kouhy and Lavers (1995) state that stakeholder and legitimacy theory should not be seen as separate theories. Unlike legitimacy theory however, stakeholder theory focuses on the power of the various stakeholder groups and not on the group interactions with society.

Disclosure is not just about reporting information; it is about saying the right things that suit stakeholder expectations at the right time to the right stakeholder group in the most unbiased manner (Mitchell, Agle and Wood, 1997). Environmental disclosure is about keeping the society at ease and giving all stakeholders a belief in the organisation's sustainability plans and activities.

Organisations disclose information in such a way that they deflect attention in the best possible way to avoid government regulations. The more rules and regulations there are; the less power the organisation has. Mitchell, Agle and Wood (1997) created a stakeholder recognition significance model and asserted that within this model, three attributes contribute to stakeholder control of resources; power, legitimacy and urgency. The greater the stakeholder control of resources, the more effort an organisation will put into managing the stakeholder relationships. The choice of legitimation tactics and public disclosures will differ depending on the organisation's implicit social contract. The stakeholder-organisation power relationship is not the same in all organisations. There are several ways in which an organisation may exhibit power: the ability to influence print media, the ability to obtain finance, labour competitive advantage, and the ability to increase the revenue from sales of goods and services. Organisations lose their license to operate when they breach the stakeholder norms and values.

3.2 Organisational Legitimacy defined

Legitimacy is a widespread belief that the actions of an organisation are suitable, pleasing and virtuous within some socially constructed set of beliefs, principles and values (Suchman 1995 p.574). Organisational Legitimacy is therefore, a process of legitimisation, by which an organisation seeks to gain approval from groups in society (Kaplan and Ruland 1991 p.370). Legitimisation is necessary in order to ensure an organisation's continued existence (Kaplan and Ruland 1991 p.370). Organisations are social creations and their existence depends on the willingness of society to allow them to operate (O'Donovan 2002). The legitimacy of an organisation to operate in South Africa depends on the implicit social contract.

Environmental disclosures may be made by mining organisations to demonstrate to the general public that they are fulfilling their obligations to stakeholders.[1] Legitimacy theory suggests that organisations continually seek congruence between outsider's perception of the organisation's values and the relevant public's conception of acceptable organisational conduct (O'Donovan 2002). Legitimacy theory can perhaps be regarded as a subsidiary theory of the stakeholder metanarrative in that a number of constituents are acknowledged (see for example Mitchell *et al*. 1997as cited in Campbell, Craven and Shrives 2001). Legitimacy theory, however, arguably takes a more descriptive view of how organisations communicate and interact with those constituents.

[1]For example on April 20th 2010, BP experienced negative publicity after an explosion and fire occurred on the Deepwater Horizon oil rig at the Macondo, which eventually sank the vessel on April 22nd 2010. The event caused the death of 11 people, serious injury to 17 others and permanent ecological, environmental and economic destruction to the Gulf of Mexico area. BP published an environmental report in 2011/ Summerhays and de Villiers (2011) suggested that the change in BP's disclosures were aimed at providing information to legitimise organisational activities.

3.2.1 Perception management through disclosure

The basic tenet of legitimacy theory is that the perception of the organisation by their relevant publics is based on how that organisation has acted in line or otherwise with socially determined norms. Often this perception of management is based on their views of the stakeholders (Lim, Wilmshurst and Shimeld 2009). Major environmental incidents such as water pollution, toxic emissions and oil spills can occur which often results in high environmental consequences to both the wider community and the organisation. Information is crucial for the society to understand the "what and why's" of the environmental incident. Clear understanding and knowledge is what changes a society or it is what keeps the societies loyalty. Lim *et al.* (2009) state that in instances where the relevant publics of an organisation perceive that an organisation's cost is greater than its benefits, an organisation may risk "its operating licence" and ultimately is very existence is threatened. Conversely, organisations that manage to communicate successfully that they are acting in line with societal norms and are playing an essential role in the country's development, are likely to be considered legitimate.

The management of relevant public's perceptions becomes very difficult as legitimacy is a dynamic constraint. Legitimacy is dynamic in that societies continuously evaluate an organisation's systems, strategies and output against an ever evolving expectation. Lindblom (1994) states that the "legitimacy gap will fluctuate without any change s in action on the part of the organisation. Indeed, as expectations of the relevant publics change the organisation must make changes or the legitimacy gap will grow as the level of conflict increases and the levels of positive and passive support decreases. Societies' norms and bounds are not considered to be fixed, but continuously change over time, thereby requiring organisations to be responsive to the ethical and moral environment in which they operate.

The shifts in the relevant public's interests can be caused by a gradual change in societal expectations as some matter becomes known over time, or an immediate change in interests if information is suddenly gained that is significantly different from their legitimised activities. Lindblom (1994) distinguishes between legitimacy which is considered to be a status, and legitimation which she considers to be a process that leads an organisation being regarded as being legitimate. An abrupt change would become particularly apparent for organisations that suffer some controversial, accidental or crisis event (Elsbach 1994 as cited in Summerhays 2011). The legitimation process is a continuous process because new environmental incidents that threaten organizational legitimacy can occur, or past legitimacy threatening incidents can recur.

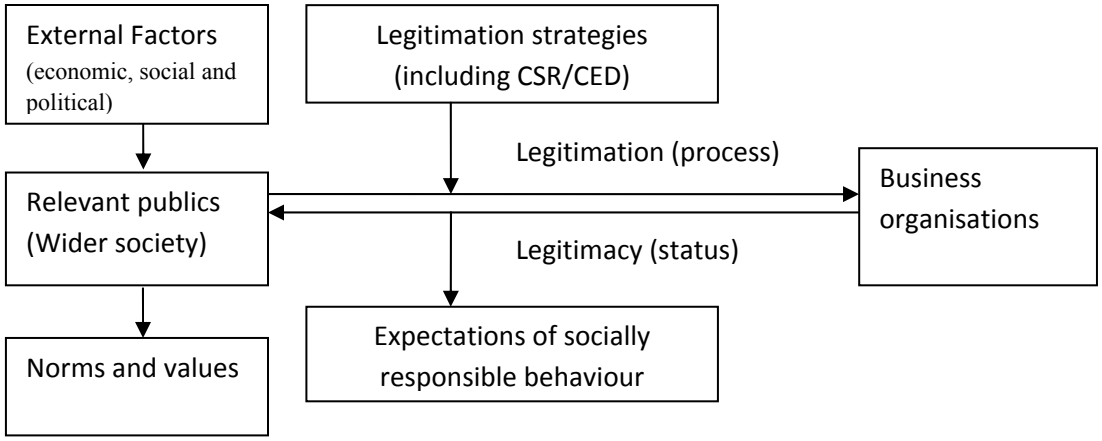


Table 2: Organisational legitimacy and the process of legitimations (Hibbitt 2004)

3.2.2 The role of media in shaping community concerns

Media agenda setting theory posits a relationship between the relative prominence given by media to various issues, and the degree of importance the issue will have on the general public (Brown and Deegan 1998). Increased media attention is seen to have a direct relationship to community concern for a particular environmental issue. McCombs and Shaw (1994 as cited in Deegan, Rankin and Tobin 2002) stress that the first step in the formulation of public belief is public awareness and this awareness is shaped by the media. Past studies indicate that increased media attention influences the public's perceived salience for issues and that the media setting agenda theory typically precedes community concern for environmental issues (Trumbo 1995, Deegan, Rankin and Tobin 2002). The media are not seen as reflecting community priorities; rather, they are seen as influencing them, and in turn, shaping the public agenda. According to Ader (1993 p.310 as cited in Deegan, Rankin and Tobin 2002 p.314), "the public needs the media to tell them how important an issue the environment is. Individuals do not learn from real world cues.'

Dearing and Rogers (1996 p.64) found that an issue published in a negative light is more likely to have an effect on the community's importance for a particular issue relative to positive publications. From the discussion above and the review of other literature, it does seem that media coverage influences how the general public would react to an environmental incident. Observably, for mining organisation management to react to media publicity (and in this research we are concerned with environmental disclosures) they must perceive that the media coverage will impact the general public and that the media is simply not a "passive transmitter of a reality that has an existence of its own (Severin and Tankard 1992 as cited in Deegan, Rankin and Tobin 2002 p.316).

3.3 Types of Legitimacy

Depending on the different theoretical arrays, a number of subtypes of organisational legitimacy can be identified. In order for legitimacy to be bestowed, the relevant publics must judge an organisation's operations against a set of accepted standards. According to Scott, Ruef, Mendel and Caronna these standards include laws and regulations, norms and culture. (2000 as cited in Patel and Xavier 2005). There are three subtypes of legitimacy: cognitive legitimacy, pragmatic legitimacy and moral legitimacy. All three subtypes involve a widespread belief that an organisation's activities must be acceptable within a socially constructed framework.

3.3.1 Pragmatic Legitimacy

Pragmatic legitimacy rests on the self-interested calculations of an organisation's most immediate audiences. This type of legitimacy is usually observed with primary stakeholders who interact with the organisation closely. By looking specifically at stakeholder's preferences, an organisation can determine what policies they will and will not accept depending on the actual return that the group would receive from granting legitimacy (Suchman 1995, p.578). The primary stakeholders targeted with this type of legitimacy are often institutional investors, environmental regulators and lenders (Mobus 2011, p.497). These stakeholders aim to influence an organisation or receive a tangible return in exchange for conferring legitimacy.

3.3.2 Moral Legitimacy

Moral legitimacy is based on a conscious judgement on whether South African citizens think an organisation is worthy of moral approval for certain environmental activities or not. This is legitimacy that refers to the right and wrong things to do by human ethical standards, the active involvement promoting social welfare and societal standards that people abide by, value and believe in. This type of legitimacy is sociotropic in that it rests not on self interest calculations about whether the activity benefits the constituent, but rather if the action was "the right thing to do" (Suchman 1995, p.579). Harming the moral trust or bond with the society can have a negative effect on the organisations profitability due to a loss of support from the society, without even contravening the law.

Pragmatic and moral legitimacy play a large role with society. Winning over the general public's trust, loyalty and acceptance is a huge step in the right direction in order to gain legitimacy. Both pragmatic and moral legitimacy "rest on discursive evaluation; audiences arrive at judgements largely through explicit public discussion and organisations often can win pragmatic and moral legitimacy by participating vigorously in such dialogue" (Suchman 1995 p.585).

3.3.3 Cognitive Legitimacy

The third type, cognitive legitimacy, is vitally different from the previous two in that it is not the result of a communicative dialogue between the organisation and/or its stakeholders (e.g. Aldrich & Fiol, 1994; Scott, 1995 as cited in Barkemeyer 2007). Instead, it is based on cognition, either because the organisation itself or its actions are comprehensible or are "taken for granted". In this framework, legitimacy involves affirmative backing for an organisation or mere acceptance of its role in the environment. Suchman (1995) says that, "Comprehensible" means that management, in this cognitive earth, need to ensure that they relay their disclosures in an understandable and clear manner (Suchman 1995). To provide legitimacy, the disclosure needs to mesh the experienced reality of the relevant public's daily life with the larger belief system.

The various types of legitimacy provide more than just an important connection of the organisation and its various stakeholders. Stakeholders could confer legitimacy using all or a combination of these elements (Ruef and Scott, 1998 as cited in Patel and Xavier 2005). According to Suchman (1995 p.585) as an organisation moves from the pragmatic to the moral to the cognitive, legitimacy becomes more challenging to obtain, more elusive to maintain, but it also becomes "more subtle, more profound, and more self sustaining, once established."

When a definite or possible discrepancy exists between an organisations actions and societal expectations within the social contract, a threat to organisational legitimacy exists. This would then create a desire on the part of the organisation to manage the discrepancies. In order to effectively deal with the discrepancies, management would need to implement plans in line with the social contract and mobilise resources and conform to societal values as part of a legitimation process. An organisations legitimation tactics or environmental disclosures will depend on whether the organisation is trying to gain, maintain or repair legitimacy. The discussion below represents the final refinement detail within the organisational legitimacy research.

3.4 Phases of Legitimacy/Legitimacy Strategies

The four phases of legitimacy are: gaining legitimacy, maintaining legitimacy, extending legitimacy, and repairing legitimacy. Each phase is equally important.

3.4.1 Gaining Legitimacy

This phase of legitimacy is right in the beginning of an organisation's development when an organisation is established (Suchman 1995). Most organisations in this phase are focused on breaking even and ensuring that the industry, society and stakeholders acknowledge that the company is effective, efficient and proficient. Operational effectiveness also plays a major role during this period. All the different aspects within the organisation must have a balance of legitimacy and this is the difficulty of this phase.

All departments and dimensions of the organisation would have to gain legitimacy depending on what impact that specific division would have on the organisations financial and sustainability performance. In order to achieve legitimacy during the establishment stage, the organisation needs to disclose clear information about its goals targets and position with regards to environmental safety and other environmental issues that may be of concern to stakeholders (Tilling and Tilt 2009). These need to be understood, agreed upon and accepted by the relevant stakeholders that have control over the organisation's resources.

An organisation would need to define its views and negotiate the constraints of legitimacy while also educating the general public to regard it and its actions as worthy of legitimacy, according to the constraints it proposes (Mobus 2011, p.498). Hearit (1995 p.2) contended that financial capability, however, is not the sole judge of proficiency: more significantly an organisation must meet "socially constructed standards of quality and desirability as well as perform in accordance with accepted standards of professionalism".

3.4.2 Maintaining Legitimacy

The maintaining legitimacy phase is where most organisations are expected to be. This is the phase where everything is going well and activities in his phase include efforts to prevent future challenges to legitimacy, constant environmental acts and symbolic guarantees that all is well (Asford and Gibbs 1990 p.183as cited in Tilling and Tilt, 2009 p.60).

As a result of the constantly changing cultural landscape, "managers can rarely afford to treat legitimation as a completed task" (Suchman 1995 p.594). Society expectations are not still, they are continuously changing and require organisations to be aware of these changes to respond accordingly. An organisation could accepting this notion, lose its legitimacy, even though it has not changed the way in which it operates from actions that were previously deemed legitimate (Deegan *et al*, 2002 p.319). Organisations would need to make constant representative guarantees that all is well, and environmental acts to prevent and pre-empt possible threats to legitimacy (Ashford and Gibbs 1990 p.183 as cited in Tilling and Tilt, 2009 p.60). "Changing activities without communicating such changes is considered to be insufficient" (Deegan *et al*, 2002 p.320). Change without disclosure may cause confusion and panic. Whether the change is justified, stakeholders concerned want to know why certain changes occur so that they know that everything is under control and not due to chance or uncontrollable circumstances. Maintaining legitimacy, by disclosing environmental information, is crucial in proving to the society, public and stakeholders that the organisation can withstand problems, even drastic incidents, if there are any.

Lindblom (1994 p.3 as cited in Deegan *et al* 2002, p.320) supports the view that society's expectations change over time and asserts that: "Legitimacy is a dynamic in that the relevant publics continuously evaluate corporate output, methods and goals against an ever-evolving expectation. The legitimacy gap will fluctuate without any changes on the part of the corporation. Indeed as expectations of the relevant publics change, the corporation must make changes or the legitimacy gap will grow as the level of conflict increases and the levels of positive and passive support decreases".

3.4.3 Extending Legitimacy

An organisation may need to reach a larger target market or modify the way it connects with its current market by extending its legitimacy. This is done by evaluating the new target market and exercising the need to monitor and cover their needs and wants. This will, therefore, make the organisation more diverse and increase the organisations net wealth and market share. Ashford and Gibbs (1990 p.180 as cited in Tilling and Tilt, 2009 p.61) mention that the extension of legitimacy is necessary and may be "intense and proactive as management attempts to win the confidence and support of wary potential constituents". It is always good to increase the number of people who support or invest in the organisation. Changes to the operational process, new activities and adaptations will need to be implemented by the organisations in order to smooth progression into the new market.

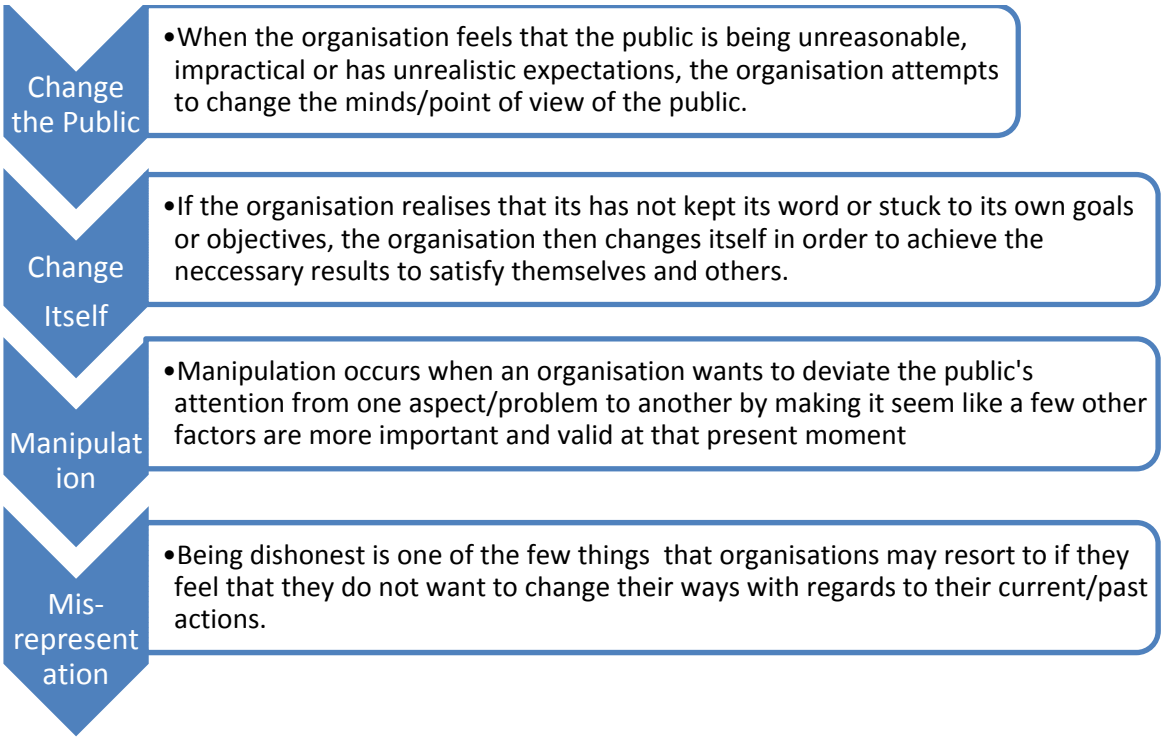
3.4.4 Repairing Legitimacy

Anything may occur within the organisation or within the society that may have a negative effect on the business. The organisation will need to acknowledge having a problem, identify the problem, find the cause of the problem and propose a solution to the problem (Hearit 1995). Disclosure during this phase is crucial as society, stakeholders and public might have different views or perceptions of how they want to hear about the problem and how they will react to the problem.

The social contract needs to be continuously inspected and management needs to make sure a legitimacy gap doesn't become too large, which may destroy the implicit contract completely. Often organisations get caught up with routine disclosures for the maintenance phase, that when a threat occurs, they often have no strategies to effectively deal with the legitimacy gap (Suchman, 1995 p.597). When the crises event occurs, the habitual legitimation techniques may no longer be effective. It is likely that most organisations will need to defend legitimacy due to the fact that (Hearit 1995, p.3 as cited in Tilling and Tilt, 2009 p.61) organisations must fulfil both a competence and society requirement to achieve legitimacy. Trying to recognise what is required in a short amount of time before all hope and trust is lost is a difficulty that needs to be overcome.

A coomon method used by organisations to manage their relevant public's interest and repair legitimacy after a crisis is through disclosures in their annual reports (O'Donovan 2002). Being a major public document, the annual report can have a vital impact on the perceptions of the relevant publics. An increase in positive, self laudatory and symbolic disclosures has been identified as the most dominant way to manage stakeholder's doubt (Deegan 2002 as cited in Summerhays and De Villiers, 2011). By increasing disclosures, organisations are able to counteract the negative environmental news released about their operations. Lindblom (1994), O'Donovan (2002) and Dowling and Pfeffer (1975) each developed different categories of disclosure strategies that organisations adopt in trying to repair legitimacy. Cho (2009) combined and reclassified prior classification into three disclosure strategies. Suchman (1995) also identified three disclosure strategies that an organisation might implement in dealing with a large legitimacy gap; these classifications are shown on page 54.

Lindblom (1994 as cited in Tilling and Tilt, 2009 p.61) mentions four ways an organisation attempts to legitimise their activities when an incident has occurred.



From all that is mentioned above, legitimacy thus appears to demonstrate the communication of an organisation with its relevant publics. It represents the equally advantageous relationship an organisation has with its stakeholders. Freeman (1984 p.25) publicised this notion of stakeholders; by defining them as "any group who can affect or is affected by the achievements of the organisation's objectives". This unlimited notion of an organisation involves putting into action goals that are in line with all the stakeholder's values and norms. This research will use the organisational legitimacy defined above and will look at the media pressure by making use of Suchman's definition (1995 p.574) of legitimacy as "a generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions".

Chapter 4: Literature review

4.1 Corporate environmental reporting Research

Environmental reporting has attracted much attention for a long time. The United Nations Conference on Environment and Development, also known as the Rio Summit that took place in 1992, drove countries to take environmental issues a step further. It was emphasised at this conference that it should be the efforts of all society, business and accounting that ensure a system that attempts to repair or prevent the damage that is being done (Gray and Milne, 2002).

Due to the fact that the environment belongs to all who live in it, the masses should be empowered to look after this communal asset. Organisations should have more partners in the stewardship of the environment. In his study, De Villiers (2004) laments the financial illiterates who do not even have access to the annual reports where this information is provided. A typical voluntary information disclosure strategy involves system quality that is measured by overall satisfaction of all stakeholders. De Villiers (2004) proposed a system where disclosure of environmental conduct can play a role in empowering the least advantaged in society.

Research comparing Corporate Social Responsibility Reporting (CSRR) in developed and developing countries is contradictory. De Villiers (2004) found that developing countries are lagging behind, while others found developing countries to be very comparable. A study by Dawkins and Ngunjiri, 2008, compared CSRR in leading South African organisations to that of leading developed countries and frequencies and levels of CSRR were generally better than those of large multinationals. Bangladesh, a less developed country had the lowest levels of social and environmental disclosure (Hossain, Islam and Andrew, 2006). The main barriers for CSRR in Bangladesh included lack of awareness, lack of the regulatory framework, lack of education for sustainable development, tendency to disobey the laws, lack of motivational incentives, and lack of combined initiatives from NGO, media and other pressure groups of the society (Hossain,Islam and Andrew, 2006).

The study done in Argentina by Gardia-Fronti Ines (2007) showed that there are no incentives to encourage organisations in developing countries to disclose environmental information in developing countries' and that these countries governments should enforce regulations of information disclosure as the legal context does not compel organisations to report their actions. Bandara, in Sri Lanka, also established that stakeholders' demand for environmental information was not satisfied and for this country, barriers to the supply of environmental information were due to political, organisational and individual factors.

Prior research also found that environmental accounting failed to find a consistent relationship between pollution performance disclosure and actual pollution performance. Are our disclosures really reliable? Moreover, some researchers found that they are characterised by the predominance of general statements and rhetoric in CSR, rather than the reporting of specific action plans.

Gray *et al* (1995) established that corporate environmental reporting (CER) was unsystematic. One would expect this to change over time as new insight and knowledge about CER is established. To the contrary, it continues to be unsystematic as if organisations are improving at discarding the negative impact that they are having on the environment. A typical voluntary disclosure strategy involves two factors: information quality, measured by the usefulness of the content and the adequacy of the information, and system quality, measured by the overall satisfaction of stakeholders.

Detailed studies on theoretical empirical research in environmental accounting failed to find consistent statistical relationships between pollution performance disclosure and actual pollution performance. In conclusion, there are inconsistencies and contradictions that are observable in business and accounting contributions towards environmental sustainability. The World Business Council For Sustainable Development and the International Chamber of Commerce made a case that business could deliver sustainability without the interference of governments through legislation (Gray and Milne 2002). They argued for a voluntary approach to sustainable development by business. Environmental stewardship and social justice needs more players and it seems that at this moment it is leaning towards business and accounting, at the expense of the global environment.

Research already established that corporate environmental reporting is related to company size, industry, country of reporting and ownership and capital intensity, age of corporation, strategic posture, senior executive attitudes and the existence of a social responsibility committee (Gray *et al*. 1995). Organisations in environmentally sensitive industries disclose more environmental information than organisations in other industries. Mining organisations have a greater need to legitimise their operations by means of environmental disclosures because their environmental impact is extensive and obvious. Studies by Doppegieter & De Villiers (1995) and De Villiers and Barnard (2000) found that more mining organisations disclose environmental information than other organisations in South Africa. Industry differences are also experienced in both developed and developing countries.

Sources of corporate environmental disclosures are annual reports, websites, stand-alone reports and other media. According to Suttipun and Stanton (2012), annual reports and websites are the most widely used sources of environmental information. Moreover these researchers could not find different amounts of environmental information between the annual report and websites (Suttipun and Stanton, 2012). However, Wiseman (1982 as cited in Suttipun and Stanton, 2012) stated that annual reports are widely recognised as the principle means for organisation's communications of articles and intentions. In addition, the researcher pointed out that environmental disclosure on corporate websites in developing countries is scant compared with corporate environmental disclosures on websites in developed countries. Inspection of the research results confirms previous international findings that organisations in environmentally sensitive industries tend to disclose more environmental information than organisations in other industries.

4.2 Environmental reporting in South Africa

With the adoption of the Constitution in 1994, with its principles of transparency, accountability and democracy, we expect CER to grow. Is this the case or not? Is SA CER better than other developing countries' or not? Environmental reporting is found in South Africa but it is done voluntarily, the reporting is unsystematic and it does not lend itself to comparisons between organisations. The main reason is that environmental reporting is unregulated and that organisations often use it to emphasise their good environmental news or to explain away their bad news. This in itself is a compelling case for legislation not based on an "apply or explain" basis regarding environmental disclosure.

The study by Villiers and Barnard (2000) found that a great number of mining organisations disclose environmental information more than other organisations in South Africa which is in line with international research. In their study "trends in environmental reporting in SA", E. Antonites, C.J. de Villiers, (2003) found that there was a decreased disclosure of specific environmental information, which is in contrast to a historical trend of increased disclosure of general environmental information. The disclosure of general environmental information, such as impacts, risks and mission statements, appear to have increased until 1999, only to stabilise at that level until 2001 while specific environmental information decreased from 1998 to 2001. Organisations, therefore, opt for the exclusion of some specific environmental information for their own benefit.

Tilt and Symes (1999) asserted that "corporate environmental reporting is done in an unsystematic, sometimes haphazard fashion, while the format and the items disclosed are changed to suit management's agenda." Grappling with the issue of why South African organisations do not report more environmental information, De Villiers, Charl and Johannes (2003) found that the reason behind this was that it was not a legal requirement.

The 2001 Survey of Sustainable reporting in South Africa, conducted by KPMG South Africa indicates that the production of stand-alone public reports on sustainability issues has also increased in South Africa but still lags substantially behind international levels, with only around 10% of South Africa's top 100 organisations issuing environmental and social reports. Organisations in energy-intensive industries disclose significantly more environmental information than the other top 100 organisations in all categories of reporting. The group of energy organisations comprises organisations in energy-intensive industries or organisations that are producers of energy carriers, such as coal. The conclusion to be drawn is that differences in the extent of environmental reporting (De Villiers & Lubbe, 2001).

According to Solomon and Lewis (2002) incentives fall loosely within four theoretical perspectives, namely: those of market, social, political and accountability. Each arises from different perspectives held by different sectors of society who require information for decision-making and/or for accountability purposes. A study by de Villiers, 2003 to find out why South African organisations are not reporting more environmental information when managers are more positive about environmental disclosures found a lack of a legal requirement to be one of the most important disincentives for disclosure. This agrees with the findings by Solomon and Lewis (2002).

4.3 Legitimacy Research

Mining organisations make environmental and social disclosures to relay their professional judgment applied and to meet the expectations of their relevant publics (see Burchell *et al*; Richardson, 1987 as cited in Cho, 2009). Deegan (2002) supports the above statement as he asserts that environmental disclosures are an effective tool management may use in shifting the mindsets of their relevant stakeholders. Due to the idea that organisational legitimacy rests on the notion that the 'social contract' needs to be upheld, there is a direct relationship between the possibility of changes in public opinions, their values and the strategic intent of senior management to manage the changes in opinion (O'Donovan, 2002).

Patten (1995) performed an exploratory study and found that CER disclosures are strategic tools used by management to manage shifts in perception and deal with negative publicity in the social environment. Roberts (1992) similarly found that market, economic, political and societal pressures impact on manager's public disclosure of the organisation's environmental performance information, similar to the disclosure of financial performance information.

Most of the organisational legitimacy literature in sustainable reporting explores management strategies after a widely publicised negative environmental event. Management may make specific environmental disclosures after an environmental crisis, like an oil spill or after a harmful incident (see Patter, 1992; Walted and Schwartz, 1997 and Deegan and Rankin, 1996). When a legitimacy-threatening incident occurs, management may find that their reputation has been damaged and may seek to repair legitimacy by realigning themselves with the social contract terms and making the necessary environmental disclosures (Cormier and Gorden 2001). Prior research performed by Salancik and Meindl (1984) and Amernic (1992) has concluded that management have used disclosures to persuade society to accept an organisation's activities and have attempted to use disclosures to correct false impressions.

Deegan *et al*. (2000) examined the impact of five major environmental incidents that took place, and the effect it had on disclosure within and outside the country. Deegan *et al.* (2000) found that organisations increased total-incident related disclosures within the annual report. BHP Limited, the organisation directly involved in the incident increased the positive disclosures and increased their level of disclosures in comparison to other organisations in the industry as they faced higher levels of media exposure. Patten (2005) also found support for the legitimacy theory when he explored the effect of the asbestos incident on the James Hardie Industries media disclosures. After James Hardie Industries had to deal with claims from past employees and customers, this severely affected their legitimacy. Patten (2005) used Suchman's legitimacy coding matrix, spilt into the various phases of legitimacy and the types of legitimacy. Overall James Hardie Industries was found to have used legitimacy strategies to correct misconceptions and repair their legitimacy when it was challenged.

Summerhays (2011) performed a similar study to Patten. He explored the annual report disclosures of BP, ConocoPhillips, Shell, Total, Chevron and ExxonMobil in response to BP's 2010 Gulf of Mexico oil spill. The paper analysed environmental disclosures before 2009 and after the crisis. Summerhay's (2011) results showed that all six oil organisations used a high percentage of image enhancement disclosures, a low percentage of disclaimer strategies and no defection strategies. The six oil organisations continuously repeated their positive activities to ensure that their positive news was noted by the organisation's relevant publics.

Harte and Owen (1991, p.59 as cited in Tilling 2004 p.36) asserted that the "need for such an enhancement of credibility is suggested by earlier research indicating that social information provided within annual reports tends not to be directly related to the quality of actual performance and can indeed be positively misleading". How an organisation maintains or regains legitimacy through their environmental disclosures is subject to the pressures placed on management. The source of these pressures can often stem from the media. Evidence indicates that management react to negative media coverage and use environmental disclosures to lessen the adverse effects caused by negative media reports. Deegan *et al* (2000, p.105) examined the relationship between Media Agenda Setting Theory and Legitimacy Theory and found a direct positive relationship between environmental disclosures and media articles.

A similar study has been performed by O'Donovan (1999), in which he considers the role of the media and their impact on disclosures. Interviews with senior management were carried out and the study found that managers used annual report disclosures to respond to criticism by the public. O'Donovan's (1999, p.82) data analysis suggested that "corporate management believe, to some extent that the annual report is an effective way for informing and educating the public corporation's view about certain environmental issues.

Arguably, there may be several reasons that may influence management's decision to disclose environmental information. The perceptions by management of what would be the best disclosure strategy for the organisation or what their relevant public's information needs are could play a vital role in the type and quantity of environmental disclosures observed. This paper provides an analysis of those strategies identifies and the observed level of disclosures within the mining sectors annual reports.

Chapter 5: Methodology

5.1 Research Design

As I am concerned with the development of organisational environmental disclosures after the acid mine drainage, I have adopted an event study methodology, to determine the impact AMD had on the mining industry. As a result, this research extends over 3 years from 2009 to 2011.There are 2 reasons why this period is interesting. First, the introduction of the King III code which set the worldwide bar on governance and sustainable development; second, on a strictly environmental level, the acid mine drainage incident. Therefore, an expectation is that the above 2 events had an effect on the environmental disclosures of mining organisations.

Event studies originated in finance and accounting research to measure the impact of a corporate event on an organisation's market valuation. An event study begins with identifying the event day which is the initial announcement day of the event of interest. This is followed by setting the event window over which a firm's stock return will be examined, and the estimation window, over which the historical daily stock returns can be collected and the model parameters can be estimated.

5.2 Sample

In order to meet the research objectives, an examination of the organisational environmental communication of a sample of South African mining firms was performed. South Africa has been retained as the research area for two reasons: ease to access of annual reports and the number of environmental scandals which may affect the scarcity of resources.

Organisations from mining sectors were selected because of the recognised environmental impacts of this sector. Due to the absence of reporting protocols for private organisations and lack of access to their annual reports, only listed mining organisations were included in the sample. The analysis was carried out for a three-year review period from 2009 to 2011 to identify trends in the frequency and nature of environmental disclosures. Data was collected from annual reports and media press releases. The use of media publications from Chronicle allows for data collection from a geographically dispersed population and for the standardization of the frequency and nature of disclosures to facilitate comparison and analysis (Saunders, Lewis *et al* 2009).

5.3 Data collection

The study investigates the variation in environmental disclosures of the 43 mining organisations before and after the acid mine drainage incident. Annual reports and media articles were obtained in order to ascertain whether legitimacy theory explanations could be applied to the responses of the mining organisations after the AMD event. All mining organisations were selected, regardless of the fact that they might have not been involved in the scandal as it is highly probable that the AMD actions in one organisation could affect another, either completely through a change in the way society views that industry or implicitly through their benchmarking activities.

Data was collected from two different sources: first, each mining organisation's annual reports for financial years 2009 and 2011.The annual reports were selected due to the fact that institutional investors value the information presented and regard it as a fundamental source of information (Huchins 1994 as cited in Summerhays, 2011). Annual reports are also helpful in assessing the importance of legitimacy to an organisation, as the annual report attempts to link the interest of the various stakeholders. An organisation's annual report is also seen to be highly credible, and organisations are likely to control the opinions of the various stakeholders in order to influence their decision-making process. Annual reports are also strictly regulated which means that management needs to ensure that they have been prepared according to standard. The regulations create consistency and allow for easier comparisons from organisation to organisation, providing a level of reliability. According to Werther and Chandler (2005), incorporating the Sustainability report into the company's annual report increases internal commitment and compliance to Sustainability policies and stakeholder awareness of company efforts in that regard. Accordingly, the researcher evaluated data contained in the annual reports and excluded information posted in separate social responsibility and sustainability reports and corporate websites which, while publicly accessible, do not have the same degree of importance.

5.4 Study sources

This study uses information from two sources. The first source of information is the level of annual report disclosures, specifically the environmental reporting section, to ascertain whether the level of environmental disclosures increased after the acid mine drainage incident. The second source is an analysis of the media disclosures with the Chronicle database to determine whether the disclosures indicate legitimisation strategies.

The two gathering processes to address the research questions are reliant on the content methodology analysis tool. Content analysis is a method of analysing exchanges of ideas through printed, verbal or visual communication (Code, 1988 as cited in Elo and Kyngas 2008). It was initially used in the 19th century as a way of analysing newspaper and magazine journals, advertisements and political speeches (Harwood and Garry, 2003 as cited in Elo and Kyngas 2008). Today content analysis has a long history of use in communication, sociology, journalism, marketing, commerce and during the last few decades its validity has shown stable growth (Nuendorf, 2002 as cited in Elo and Kyngas 2008).

Content analysis as a qualitative research method is a methodical and impartial method of unfolding and quantifying raw data (Krippendorf, 1980).It allows the sifting of large amounts of data and with virtual simplicity in an orderly way as a way of testing theoretical matters to gain an understanding of the data (Stemler, 2005). A researcher is able to refine words into fewer content-related categories and group texts or visual messages into categories containing the same meaning. By being able to replicate and make well founded deductions, a researcher is able to provide knowledge, new insights, an interpretation of facts and a practical guide to action (Krippendorf, 1980). The researcher may use the term "concept" or "category" to condense the extensive information to describe a phenomenon. Usually if the purpose of the study is to develop a theory, it is recommended that the term "concept" be used as an alternative for "category (Kyngas and Vanhanen 1999 as cited in Elo and Kyngas, 2008). However in this paper when describing the analysis process, we use the term "category" because this research draws on the work of Suchman (1995) and does not result in the construction of a new theory.

Content analysis allows a researcher to compare comprehensively two documents and perform trend analysis. For example, Stemler (2005) used a content analysis methodology in analysing school mission statements to establish what schools regard as their principal reason for establishment. Furthermore, content analysis allows a researcher practically examine shifts in society views. Data collected from an organisations' annual reports in the late 1990's can be objectively compared to data collected in the future to determine if reporting changes related to environmental reform have manifested themselves in environmental annual reports. The "content analysis" method has been criticised by researchers in the quantitative field, who considered it to be a basic, unsophisticated method that did not lend itself to detailed analysis. Despite criticism, content analysis has an established position in business, sociology and journalism research and offers several significant benefits. One of these is that it is a content-sensitive method (Krippendorff 1980), and another is its flexibility in terms of research design (Harwood and Garry 2003 as cited in Stemler 2005).

5.5 Conducting a Content analysis

According to Krippendorff (1980 as cited in Stemler, 2005, p.2), six questions must be addressed in every content analysis:

1) “Which data are analysed?”
2) “How are they defined?”
3) “What is the population from which they are drawn?”
4) “What is the context relative to which the data are analysed?”
5) “What are the boundaries of the analysis?”
6) “What is the target of the inferences?”

5.5.1 Content analysis: Annual Report disclosures

The first phase of the study was a scrutiny of the number of environmental disclosures within the 2009 and 2011 annual reports of the 45 sample organisations. Environmental disclosures represent the information given by management that relates to the impact each operation has on the natural or physical environment. The approach is consistent with the legislative framing of what is understood by the ``environment''.

To measure the level of the mining organisations’ environmental disclosures within the annual report, the content analysis deductive approach is used. This research is influenced by Stemler’s (2005 p.3) understanding of content analysis as a method that “extends far beyond simple word counts”. The method is meaningful in allowing the categorising and coding of each data set.

The measurement of environmental disclosures was an unweighted count of the number of words on environmental issues in the annual report. The environmental issues are categorised into: material, water, biodiversity and emissions, effluents and waste. Zeghal and Ahmed (1990 as cited in Wilmshurst and Frost 2000) state that the use of word counts aids in safeguarding against inconsistencies in calculating the quantity of disclosures. They also suggest that words are the smallest unit of measurement analysis and can be expected to offer the highest quality for analysis to the study in assessing the quantity of disclosure. Supporting this, Krippendorff (1980) commented that words are an ideal measure when it is intended to measure the amount of total space dedicated to a topic and to ascertain the significance of that topic or the influencean event had on that topic.

Environmental information in the annual reports was computer scanned, and a word count undertaken to ensure consistency in measurement between organisations. Information was classified as "environmental" disclosure if it could be associated with the following:

- Environmental set of laws or requests by government;
- Activities performed to reduce environmental damage;
- Environmental strategies;
- Policies implemented to alleviate environmental effects;
- Outlays on environmental activities; or
- Litigation for environmental damage (Wiseman, 1982).

There are number of limitations in using the word count analysis method. There is a risk of inconsistent interpretation of what is being measured as annual reports containing environmental issues as environmental reporting falls under the broad umbrella of sustainability reporting and issues such as social responsibility may be erroneously included as part of environmental disclosures. In this paper, firstly the categories highlighted what is considered to be environmental reporting (aspects), secondly the reports were analysed independently by two people, the researcher and an independent researcher as recommended by Wilmshurst and Frost (2000). Only minor variations were identified, which were then subject to re-examination.

The number of words disclosed is not assumed to be indicative of the quality of environmental disclosures, although it is assumed to be indicative of the overall receptiveness by corporate management in regard to legitimising environmental performance after certain basins had been threatened by the acid mine drainage incident.. This notion is based on the principle that management has editorial power of content when a considerable number of demands for inclusion of information is expected to exist (O'Donovan 1996). Annual reports are time-consuming and expensive to generate, therefore management must employ logic with regards to the competing demands for space. As a result, space must be allocated on the basis of some awareness of the importance of environmental information to report to users.

Images reflecting environmental activities or environmental performance were excluded due to the measurement difficulties. Debatably Wilmshurst and Frost (2000) mention that "a picture may be worth a thousand words", however, it is recommended that pictures be excluded due to the fact that combining the measure with the word count may be subjective. This results in a limitation as management may use imagery in portraying to users the various approaches that have been put in place to respond to environmental incidents. Panchapakesan and McKinnon (1992 as cited in Wilmshurst and Frost 2000) reported a correlation between word count and space of words and photographs at the 0.977 level, suggesting only a negligible difference between the two methods.

Once the environmental disclosures word counts have been obtained, a percentage change will be calculated for each mining organisation to present the change in the quantity of environmental information disclosed from 2009 to 2011. This will enable the data to be evaluated reliably as there is a sizeable difference in the mining industry's annual reports based on whether they are from the gold, diamonds, coal or general mining sector. Should the percentage increase from 2009 to 2011 be statistically significant, this will offer confirmation that the level of disclosure has increased as management has tried to regain legitimacy, maintain or repair due to the consequences of the acid mine drainage incident. This provides support for the legitimacy theory and the notion that mining management disclosed environmental information as they recognised their moral responsibility towards their relevant publics. Communication strategies will also be analysed in media articles to identify trends and patterns that could provide additional descriptions consistent with legitimacy and explanations of the actions taken to re-establish legitimacy.

5.5.2 Content analysis: Media articles

Deductive content analysis will be used to analyse the media event disclosures. Catanzaro (1998 as cited in Elo and Kyngas 2008) mentions that deductive content analysis is often used in cases where the researcher desires to retest existing data in a new context. A categorisation matrix is developed and is based on earlier work such as theories, models, extant literature (Shannon 2005 as cited in Elo and Kyngas 2008).

In this study Suchman's (1995) construction of legitimacy strategies was used to develop the legitimacy categories and the coding descriptions. For instance, to demonstrate Suchman's (1995) meaning of repairing moral legitimacy, he stated that "managers may attempt, instead, to justify the disruption, redefining means and ends retrospectively, in order to make the disruptive events appear consonant with prevailing moral and cognitive beliefs" (p.598). Therefore acid mine drainage media articles that attempted to justify the mining industry's action were coded under this specific category. Another example would be Suchman's (1995) meaning of defending legitimacy through organisational strategies of publicising organisational changes "beyond offering denials, excuses, justifications, and explanations, organisations also may facilitate relegitimation through strategic restructuring (Pfeffer, 1981); although indiscriminate structural shifts may make the organisation appear unstable and unreliable (Hannan & Freeman, 1984), narrowly tailored changes that mesh with equally focused normalising accounts can serve as effective damage-containment techniques" (p.598).

One newspaper database, *The Chronicle*, is chosen to embody the national environmental news disclosures made by all mining organisations as it provides a more extensive viewpoint on the mining industry's communication strategies than would be available in the annual reports. Chronicle is a newspaper database established by the Custodian Project broadcasting all environmental news from all environmentally sensitive industries. Chronicle also includes news articles from initiatives that include rehabilitation and remedial centres, biospheres and conservation projects.It represents mass media as a comprehensive source from which the second research question can be explored. Using the Chronicle database extract tool, a search using the following terms: "Acid mine water", "Mine water", "Rising acidic water", "Acid mine Drainage" and all related articles connected to the above terms identified 89 clippings.

The start date for the event is the "media articles", chosen to detect the start of reporting of the Acid mine drainage and the enquiry into the affected areas. The end date reflected the reporting of the results of the acid mine drainage treatment. Each legitimacy paragraph and the sentences within each paragraph were coded. Each paragraph and within the paragraph each sentence has been examined to establish whether it contained legitimacy strategies. Next the quoted paragraph describing the legitimacy technique was coded against Suchman's (1995) legitimacy categories.

The list of codes came from the conceptual framework and unit(s) of analysis. The first column has a short descriptive label for the general categories and the individual codes. The second to fourth columns show the codes themselves. An assumption is made that managers of sample firms will incorporate tactics designed to maintain pragmatic and moral legitimacy with specified audiences. None of the sample firms were new entrants in the mining industry over the period examined. The study is concerned with that aspect of legitimacy affected by environmental performance, and this is not a new cultural construct over the study period. Therefore, neither the participants nor the construct of interest suffered the "liability of newness" that predicts a gaining-legitimacy dynamic over the study period.

Environmental regulatory agencies and personnel, and institutional investors are among firms' most immediate critics regarding environmental performance. These critics likely hold normative expectations about environmental performance and will scrutinise organisational actions to determine the practical consequences. Firms likely need to maintain pragmatic legitimacy with these critics, and appropriate legitimation tactics include policing the reliability of their operations and stockpiling trust through consistent exchanges that respond to normative expectations.

Public interest groups, small investors, and the environmentally conscious general public are likely audiences with normative expectations about environmental performance but generally not in direct exchange relations with firms. These groups' normative expectations are based on "the right thing to do", relative to the social contract. Firms probably need to maintain moral legitimacy with these audiences, and useful legitimation tactics include policing and communicating organisational responsibility and earning public esteem. These audiences often rely on symbolic representations of responsibility in the absence of visible consequential outcomes. The media statements made by mining representatives examined in this study make consequential outcomes more visible to these groups and are expected to influence the legitimation tactics that managers undertake.

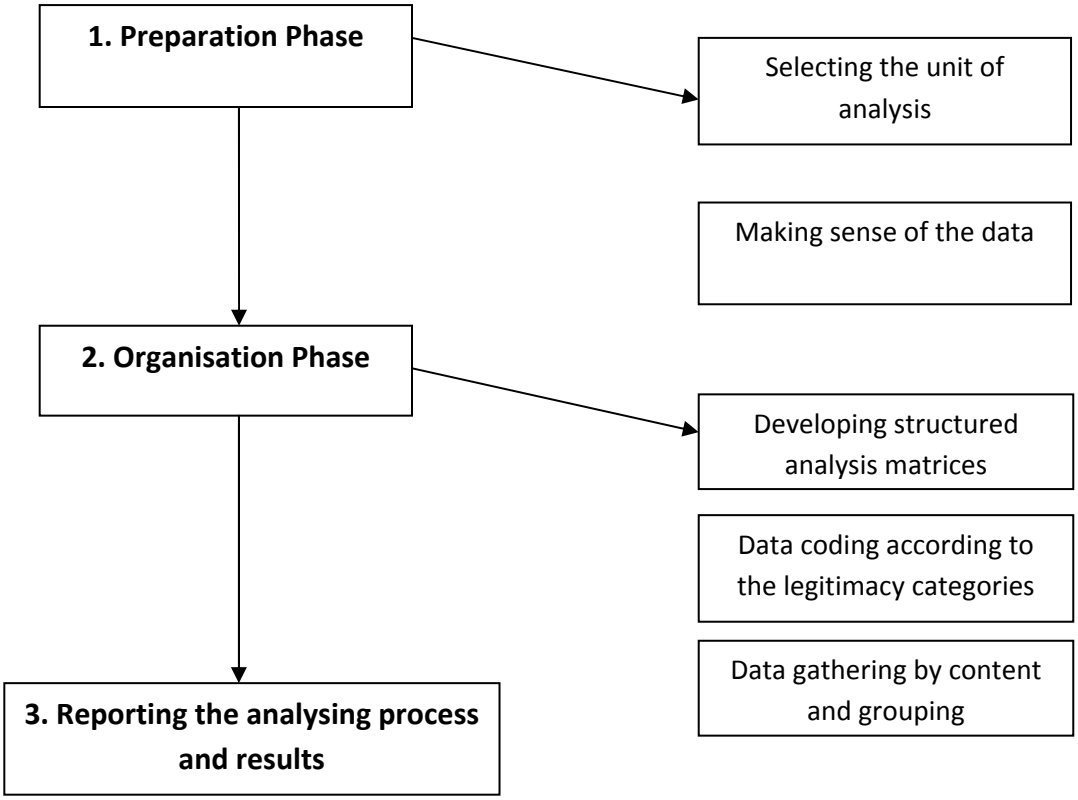


Figure 1 Preparation, organizing and resulting phases in the content analysis process.

Legitimation strategies coding matrix (Suchman, 1995, p.600)

	Gain legitimacy	Maintain legitimacy	Repair Legitimacy
Pragmatic	<u>Conform to demands</u> - Respond to needs - Co-opt constituents - Build Reputation <u>Select markets</u> - Locate friendly audiences - Recruit friendly co-optees <u>Advertise</u> - Advertise product - Advertise image	<u>Monitor tastes</u> - Consult opinion leaders <u>Protect exchanges</u> - Police reliability - Communicate honestly - Stockpile trust	<u>Deny</u> (Disclaimer -hoping to allay constituents' pragmatic concerns, at least until the organisation can assemble a compensating side payment.) <u>Avoid Panic</u>
Moral	<u>Conform to ideals</u> - Produce proper outcomes - Embed in institutions - Other symbolic displays <u>Select domain</u> - Define goals <u>Persuade</u> - Demonstrate success - Proselytize	<u>Monitor ethics</u> - Consult professions <u>Protect propriety</u> - Police responsibility - Communicate authoritatively - Stockpile esteem	<u>Excuse / Justify</u> (by questioning the organisation's moral responsibility or redefining means and ends retrospectively, in order to make the disruptive events appear consonant with prevailing moral and cognitive beliefs.) <u>Restructure</u> - Replace personnel - Revise practices - Reconfigure (selectively confess that limited aspects of organisation's operations were flawed)
Cognitive	<u>Conform to models</u> - Mimic standards - Formalize operations - Professionalize operations <u>Select labels</u> - Seek certification <u>Institutionalize</u> - Persist - Popularize new models - Standardise new models	<u>Monitor outlooks</u> - Consult doubters - Become identified with symbols which have a positive base with legitimacy <u>Project assumptions</u> - Police simplicity - Speak matter-of-factly - Stockpile interconnections	<u>Explain and educate</u> (Offer normalising accounts and explaining the disruptive events in a way that preserves an otherwise supportive worldview.)

Chapter 6: Findings and Results

6.1 Mining environmental disclosures

Appendix A shows number of word counts for each South African mining organisation together with the related percentage increase from 2009 to 2011. The annual reports showed an overall increase in environmental disclosure in 41 of the 43 mining organisations. The other 2 mining organisations indicated that a separate environmental report had beencompiled, which may have been the reason why the environmental disclosures did not show an increase.

The relevant timeline can be broken into 2 separate periods: (1) 2008-2009 was a "pre-incident" stage in which the mining industry had no major negative environmental crisis reported in the media: this served to establish a baseline for the analysis;(2) the 2009-2010 time-frame represents the Acid mine water decant. Due to the fact that the incident was publicised long after the problem had started occurring, it was deemed viable to investigate the mining industry's response to the crisis after 2012, as the aftermath public pressure continued to develop in Gauteng and throughout South Africa. There was no indication of major environmental media releases involving the mining industry during the 2008-2009 period. As such, this period appears to represent the mining organisations in their "normal" course of business, and is used to establish a baseline level for the analysis of subsequent periods.

The results show that there has been an increase of 79.41% and 89.81% in the platinum and precious metals and the general mining industry split within South African mining, the highest being 92.57% from the coal industry. This may be due to the fact that a media article reported that "AMD from coal mining is problematic in the Highveld Coalfield in Mpumalanga, and has been reflected by media attention on the consequences of severe pollution seen in the Loskop Dam and the Olifants River Catchment. It is likely that new coal mining in the Waterberg Coalfield (Limpopo Province) will lead to similar problems in that area in the future" (CSIR, 2009).

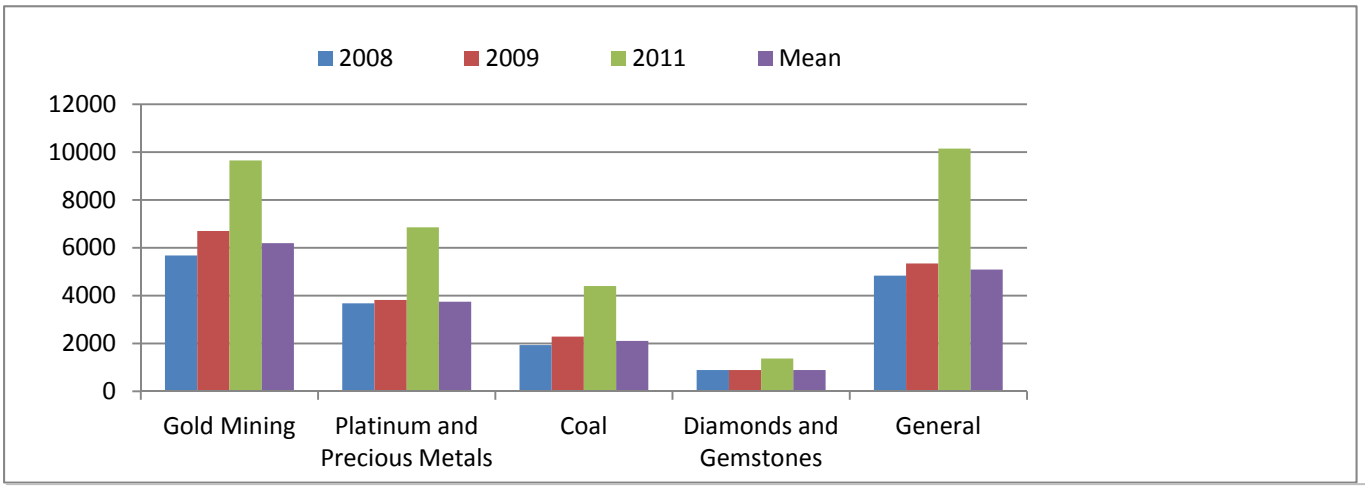


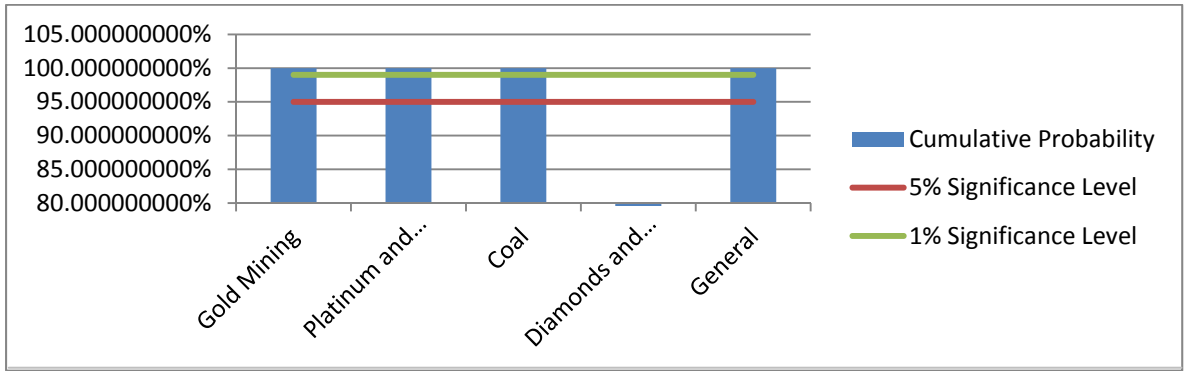
Table 3: Annual report environmental word counts year on year

6.2 Hypothesis Testing:

HO: The 2011 annual report word counts have not significantly changed after the acid mine drainage incident.
H1: The 2011 annual report environmental word counts have significantly changed after the acid mine drainage incident.
To test the above hypothesis, the statistic z test and Student t test have been used. Cumulative probabilities and p values have been calculated and tested at a 5% and 1% significance level.

6.2.1 Normal Distribution Hypothesis test

- Word count from normal distribution, mu = 2008 and 2009 sample mean & sigma = 2008 and 2009 sample standard deviation



6.2.2 Student t-test

- Word count from normal distribution, mu = 2008 and 2009 sample mean & sigma is unknown but we estimate it as being 2008 and 2009 sample standard deviation, degrees of freedom = 2 - 1 = 1.

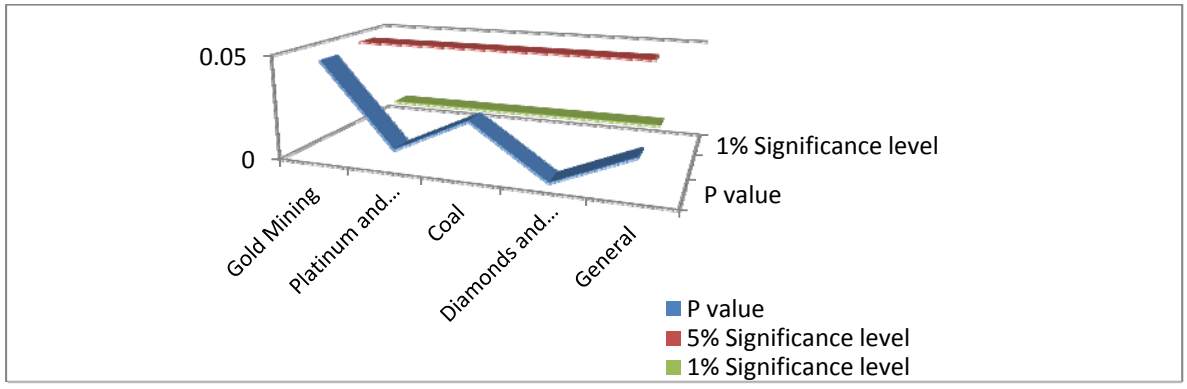


Table 2: Z Test and Student t test results

Z Test	2008	2009	2011	Mean	Variance	Cumulative Distribution	P value	5% Significance	1% Significance
Gold mining	5681	6707	9654	6194	526 071	99.99907%	0.00092%	Reject	Reject
Platinum and precious metals	3680	3822	6857	3751	10082	100.0000%	0.00000%	Reject	Reject
Coal	1934	2288	4406	2111	62658	100.0000%	0.00000%	Reject	Reject
Diamonds and gemstones	891	892	1376	892	1	100.0000%	0.00000%	Reject	Reject
General	4842	5349	10153	5096	128281	100.0000%	0.00000%	Reject	Reject
Total Mining Industry	17029	19058	32446	18043	2058948	100.0000%	0.00000%	Reject	Reject
T Test	2008	2009	2011	Mean	Variance	Cumulative Distribution	P value	5%	1%
Gold mining	5681	6707	9654	6194	526 071	99.99907%	0.00092%	Reject	Reject
Platinum and precious metals	3680	3822	6857	3751	10082	100.0000%	0.00000%	Reject	Reject
Coal	1934	2288	4406	2111	62658	100.0000%	0.00000%	Reject	Reject
Diamonds and gemstones	891	892	1376	892	1	100.0000%	0.00000%	Reject	Reject
General	4842	5349	10153	5096	128281	100.0000%	0.00000%	Reject	Reject
Total Mining Industry	17029	19058	32446	18043	2058948	100.0000%	0.00000%	Reject	Reject

The null hypothesis has been rejected at both the 5% and 1% significance level. This indicates that the 2011 level of environmental disclosures increased substantially and did not fall within the normal distribution. Assuming that the acid mine drainage incident was the only factor influencing the 2009 to 2011 disclosures, the increase in 2011, after the acid mine drainage is significant.

6.3 Strategies the mining industry used to regain legitimacy

Within the 89 media articles scrutinised, 65.16 percent had a communication strategy that could be coded within the legitimacy theory framework. A sum of 124 sentences were legitimisation strategies. Table 4(illustrated below) demonstrates that the most frequent legitimation strategy had been the repair phase (38.82%), followed by the gain phase (32.94%) and then, lastly, the maintain phase (28.235%).The most frequent legitimacy tactic used was pragmatic (43.53%), trailing behind were moral and cognitive equally at (28.24%).

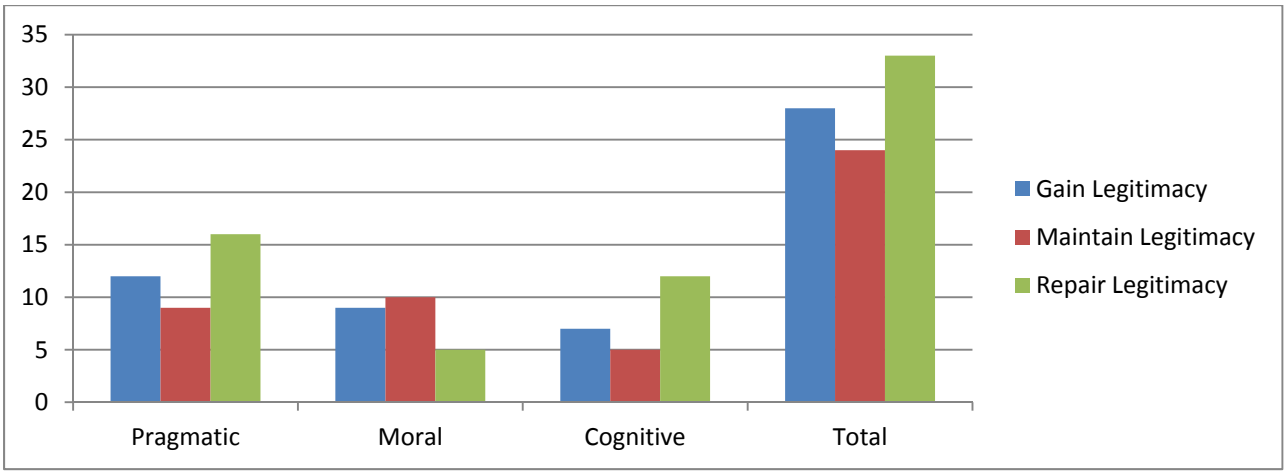


Table 4. Frequency of legitimacy strategy ideas

	Gain Legitimacy	Maintain Legitimacy	Repair Legitimacy	Total
Pragmatic	12	9	16	37
Moral	9	10	5	24
Cognitive	7	5	12	24
Total	28	24	33	85

Table 5. Frequency of Mining Industries Legitimacy strategy sentences

	Gain Legitimacy	Maintain Legitimacy	Repair Legitimacy	Total
Pragmatic	20	13	20	53
Moral	13	12	8	33
Cognitive	16	5	17	38
Total	49	30	46	124

From a legitimacy theory lens, it can be asserted that the mining organisations in South Africa , an emerging market, are cautious of the concerns of the society when communicating information in their corporate annual reports, as after the environmental crisis, their main strategy is to repair legitimacy.

6.4 Repairing legitimacy strategies

The mining industry predominantly utilised 3 communication tactics of a pragmatic nature: 1) Outright denial, 2) Defection and disclaimer and 3) Avoiding panic. Of the 16 counts, 18.75 percent were denials of liability, 12.5 percent referred to the creation of an expert committee to act in response to the problem and statements such as "it's government's problem", while the remaining 62.5 created monitors to ensure markets did not panic.

6.4.1 Denial strategy:

- *"In the eastern basin - located roughly below the town of Nigel - there was currently no risk because the water was 700m below the surface. There were also no immediate problems with the central basin, directly below Johannesburg" (Article 31).*
- *"The study has just been completed, and it was concluded that no risks of mine water flooding any basement structure in the CBD of Johannesburg exist," (Article 52)*

A disclaimer strategy was used by the current mining industry management to allow the public etc. not to view them as being completely liable for the activities that caused the AMD.

- *In one of the mining organisations half-year results, the CEO conveyed that "there is an understanding between all stakeholders, on the interim solution", but also that "the liability to resolve the AMD* ***problem would reside with the State****, requiring a contribution of approximately US$19.8 million (R145-million). The remaining 30% liability would be funded by existing active mining operations in the area, according to the CEO." (Article 14).*
- *"Past mine owners are liable for environmental degradation" (Article 85).*

By totally disclaiming responsibility current mine management could ensure the general public and environmental groups did not attach all of the negative consequences of the water pollution to their organisations. This would make it possible for them to frame their actions taken in response to the acidic mine water in a positive manner.

6.4.2 Deflection Strategy: This strategy was used in conjunction with the image enhancement strategy to divert attention away from the acid mine drainage through the use of positive disclosures within the AMD media report.

- *The CEO of one of the gold mining organisations asserted that South Africa would remain a significant participant for the next 20 years to 30 years, with the 50-year South Deep outlasting all the other megamines. He spoke on the occasion of the granting R26-million sponsorship to the mining engineering faculties of Johannesburg's two main universities to boost mining engineering skills.(Article 20)*

6.4.3 Avoiding panic

This involves making disclosures that change the perceptions of the industry's relevant publics; so that the industry is not recognised as being responsible for a perilous incident i.e. the event which threatened their legitimacy. In adopting this strategy the organisation will put into action acidic water treatments, however probably not as speedily as the general public would like. The organisation would then need to change the perceptions of the external parties. Suchman (1995) recognised that organisations will adopt this strategy in an attempt to alleviate the concerns of the general public because of the high remediation costs attached to a crisis. Specific examples from the clippings are:

- *"We want to assure South Africa that there is no need to panic at the moment, as it remains our responsibility to ensure the safety of our water systems in the country" (Article 71).*
- *"We want the South African public to know that Gauteng will not run out of water in the near future, it is also incorrect to say that 80% of South Africa's water will be so polluted that it will not be possible for it to be treated to potable quality and that the Gauteng province will be worst affected as the Environment Conservation Association claims" (Article 30).*
- *"We are now working together to find sustainable solutions to the challenges posed by acid mine drainage. We will not allow the situation to get out of hand; it will not reach crisis proportions" (Article 46).*
- *"South Africans should not be panicking yet" (Article 68).*
- *"It's urgent but it's not a crisis" (Article 68).*

Similarly the mining industry used two types of strategies to repair legitimacy of a moral nature: (1) Offering excuses or justifying its actions and (2) Restructuring. The majority (60%) of these strategies were excuse/justification strategies.

6.4.4 Offering excuses or justifying actions:

- *"We are under massive pressure to develop the huge coal resource in western Limpopo, estimated to contain nearly half our national coal reserve. Mining investors see massive opportunities in the region" (Article 13).*

- *"The increased rainfall over the last few months had considerably raised the level of the acidic mine water in the underground mined-out pockets of the Witwatersrand, regardless of our action."(Article 29).*

- *"We are supposed to be receiving a R5m subsidy from the State, but we have not received this since October last year," said one of the general mining managing directors" (Article 54).*

6.4.5 Restructuring

- *One of the Gold mining organisations made a decision to indefinitely suspend underground mining operations in late May this year. As a result of the uncertainty facing the company, the size of the workforce has been reduced by almost 73%.*

- *"Uranium organisations responded by recently announcing that it was restructuring its business to focus on gold production. It said a new operating plan could result in the cutting of almost half its workforce at its Ezulwini operations."*

6.4.6 Explaining or educating

The mining industry used an explanation strategy to repair legitimacy of a cognitive type 12 times across the sample.

- *"Millions of litres of heavily polluted acid mine drainage continue to be decanted into streams connected to both the Vaal and Crocodile River systems and groundwater systems on a daily basis, with devastating consequences for communities and the environment"(Article 15).*

- *"The high rainfall in the region directly impacts the level of the AMD water, and therefore the decant into the receiving environment" (Article 26).*

- *"Acid mine drainage is not only associated with surface and ground water pollution and degradation of soil quality, it also harms aquatic sediments and fauna and allows heavy metals to seep into the environment,"she said (Article 36).*

- *"AMD occurs when old shafts and tunnels fill up, leading to underground water oxidising with the sulphide mineral iron pyrite, better known as fool's gold. The acid water is believed to be currently about 600m below the city's surface, but was rising at a rate of between 0.6m and 0.9m a day" (Article 45).*

- *"The potential volume for AMD for the Witwatersrand goldfield alone amounts to an estimated 350 Mℓ/d. This represents 10% of the potable water supplied by water utility Rand Water to municipal authorities for urban distribution in Gauteng and the surrounding areas, at a cost of R3 000 for every one-million litres" (Article 47).*

- *"Acid mine drainage affects the Gauteng, Mpumalanga, North West and Free State provinces. It results from the oxidation of sulphide minerals which are exposed in a mine or are present in dust in underground shafts and tunnels. As a result of its acidity, the water dissolves rock material and may contain a range of toxic metals" (Article57).*

- *"SA has a total usable groundwater resource of 10 billion cubic metres in non-drought years. Compared to the national resource found in rivers (49 McM), this groundwater fraction is not large. Which is all the more reason we need to protect it given that most of the groundwater is found in the dolomites, some of which are affected by Acid Mine Drainage." (Article 77)*

6.5 Strategies for gaining legitimacy

The second most popular management strategy used by the mining organisations was to gain legitimacy. Suchman (1995) argues that organisations in crisis should use strategies at the repair and gain phases. Of the pragmatic type, mining organisations gained legitimacy by conforming to society and environmental group demands.

- *"Mining organisations have acknowledged and accepted that acid mine drainage is a problem needing to be addressed urgently. This should be done in a co-ordinated manner between a range of stakeholders that included the mining industry and government should always play a leading role" (Article 22)*

In a similar response to Total and BP and their environmental crisis, the mining industry used the image enhancement strategy most extensively to regain their moral legitimacy after the acidic mine water pollution. The image enhancement strategy demonstrates the need to offer symbolic displays and conforming to ideals set implicitly by society. They undertook two different methods when using this strategy. Both methods involved making self-praising disclosures about the company to deflect attention from the negative aspects of the AMD, and to show their relevant urban population that they were committed to being environmentally and socially responsible. Firstly, mining organisations used cited disclosures about the AMD where they demonstrated their commitment to undertake any actions that would remedy the damage caused by the incident.

- *"The measures in place to deal with the present environmental emergency, is a donation of R6.9million to purchase massive quantities of lime. This decision is based on evidence that lime corrects the pH of the discharge" (Article 52).*

- *"Mining organisations have made some progress in addressing the acid mine drainage issu:, there is now a Remediation Action Plan for the Wonderfonteinspruit catchment area and a huge amount of research has been done on the issue of acid mine drainage" (Article 68).*

In making these disclosures, the mining organisations demonstrated how important they felt those programmes and the donations made were in regaining legitimacy.

The media articles illustrate that the mining organisations made a concerted effort to repeat their remedial activities without elaborating on them. Information about these remedial activities was sometimes repeated in more than one Chronicle article, this was seen with the creation of the InterMinisterial Committee (IMC) being mentioned in twelve media releases.

The second method the mining industry implemented in projecting an image-enhancement strategy involved attempts to use positive disclosures to focus society's attention on the positive aspects of AMD.

- *"Decanting mine water should be seen as an opportunity. Untreated acidic mine water has been used in the past by municipal sewage works in the Central Rand to aid nitrate digestion. Given the number of sewage works in Johannesburg, and the volume of sewage to be treated, this alone could perhaps accommodate most, if not all, of the decanting water, resulting in no treatment costs, while saving clean water otherwise used for this purpose" (Article 72).*

The mining industry also gained legitimacy by conforming to models of the cognitive type. Specific examples from the clippings:

- *"Following a series of consultative meetings, the parties agreed on co-operation, in the form of a partnership between Government and the Mining Houses (Public- Private Partnership Model) so as to formulate a collaborative solution to the AMD problem. The stakeholders have agreed that the model will consist of the following key elements:*

  - Mine water collection and conveyance to a central point;
  -Development of new infrastructure and refurbishment of existing infrastructure to facilitate the collection & treatment of mine water;
  -Treatment of the mine water which addresses low pH, high levels of metals and salinity;
  -Encouraging re-use of treated mine water;
  -Discharge of treated mine water to meet Resource Quality Objectives; and
  -Augmentation of stressed river systems" (Article 23).

This desire to appear credible – and thus legitimate – in the eyes of the stakeholders, finds expression in two different discursive strategies: the first through the recurrent temporal expressions that insist on the stability of the organisation's responsible behaviour, and the second through monopolising environmental models and of connecting them to the organisation's strategy.

6.6 Strategies for maintaining legitimacy

Maintaining legitimacy accounted for 26 units in the research sample. Of the moral type, the mining organisations used the strategy of protecting propriety (policing responsibility). A specific example from the clippings is:

- "*Work on dealing with the problem in the western basin would start 'immediately'" (Article 31).*
- *"We have the responsibility to continue to pump and treat water from the Western Basin." (Article 32).*
- *"The mining company buys chemicals to treat 80 megalitres of polluted mine water" (Article 41).*
- *"Mines are actually paying for water reclamation and the reduction of acidity. In fact a lot of water from there is put back into use (and) the mines are paying for that water" (Article 76).*
- *"We are visiting the areas so we can assess what needs to be done to fix the problem" (Article 58).*

Of the pragmatic type, the mining organisations sought to protect future exchanges by monitoring tastes by consulting with experts.

- *"Recommendations are benchmarked on some countries that have experience with AMD – such as Canada and the United States of America" (Article 18).*
- *An "Inter-ministerial Committee (IMC) dealing with Gauteng's acid mine water crisis has called on some of South Africa's top experts to help find a solution to the problem. The expert team was drawn from the Council for Scientific and Industrial Research, the Water Research Commission, the Council for Geoscience, and the Departments of Science and Technology and Water and Environmental affairs" (Article 34).*

Chapter 7: Conclusion and Recommendation

Prior literature has used the legitimacy theory to explain that an organisation reacts to pressure from its relevant stakeholders. By making environmental disclosures, an organisation is able to shape public concerns and demonstrate that their operations are in line with the morals and values in the implicit "social contract".

The theoretical framework highlighted the fact that legitimacy works hand-in-hand with stakeholder theory. The environmental disclosures made in an annual report are used by stakeholders in assessing an organisation's performance, operations and environmental activities. By interpreting what is said and the corroborating evidence, each stakeholder is able follow a decision-making process and decide whether an organisation should be allowed to operate or not.

The purpose of this paper was to test legitimacy and evaluate whether it applies in the often neglected context of a developing country. Conclusions drawn by prior research that organisations use legitimacy strategies in response to an environmental crisis and that changes in environmental disclosures are driven by an organisation's need to manage or regain their legitimacy, rely on the assumption that the various stakeholders are influenced by the media and make use of the disclosures in the annual reports. As a result of having conducted this research, the evidence suggests that the assumptions above are valid. Some stakeholder groups recognise environmental matters to be crucial to their decision-making process and they seek the information in the annual report or in media articles.

Similarly in this study, a central part of the mining industry's legitimacy strategies was to ensure they could manage the interests of their relevant stakeholders to regain legitimacy after the AMD crisis. The findings show that after the rising acidic mine water, there has been an increase in the number of environmental disclosures. The results section of this paper has indicated, at 5% and 1% significance level, the 2011 environmental word counts can be said to be significant. These disclosures increased to ensure that the mining industry's relevant stakeholders could view them in a positive light if they had implemented corrective action.

This study has made use of the legitimacy matrix created by Suchman (1995), and has looked at the various ways an organisation communicates with its stakeholders after an environmental crisis. Table 4 demonstrates the strategies put in place by the mining organisations.

Table 4. Strategies used by the Mining Industry

	Types of Legitimacy	
Highest	• Repair	• Pragmatic
Lowest	• Gain	• Pragmatic
	• Maintenance	• Moral

The disclosure decisions depending on the legitimacy technique may affect each of the stakeholder groups differently. Firstly, for the shareholders, legitimacy will depend on whether their shareholders are ethical. Ethical shareholders appreciate any environmental information and remedial activities an organisation discloses in attempting to show that they are moral (Schepers and Sethi, 2003). Ethical shareholders value moral maintenance strategies and do not value the denial/ disclaimer strategy as it demonstrates that an organisation is not taking its environmental obligation seriously. Non-ethical shareholders and lenders, on the other hand, do not value environmental disclosures as a reaction to repairing legitimacy lost. They may see the mining industry's responses to conform to demands and models as an "expense" which may eat into their profitability (Schepers and Sethi, 2003) and lenders may view it as an increase in credit risk. Either way, by explaining and educating their relevant publics and only accepting partial responsibility for the incident, the mining industry can manage both types of shareholders and this demonstrates that the industry has not been severely affected by the crisis and, therefore, with minimal corrective actions, it will undoubtedly be able to continue to make dividend payments to investors and repay the interest and capital payments to their respective lenders.

Secondly, government agencies will be under pressure to create environmental regulations to prevent the mining industry from polluting water (which will be detrimental to human health). The mining regulatory environment has been seen by South Africans as a corrupt, non-ethical industry, given its high fatality rates and the AMD incident. This indicates that regulatory restructuring may be the only way to hold the mining organisations accountable for the million *m/l*'s of rapidly-rising acidic water and their other detrimental environmental activities (Stanko and Zeller, 1995). The disclosures made in the 2011 annual reports, in media articles and on company websites are likely to allow them to demonstrate an ability to uphold the "social contract" in line with the government regulators' expectations

The South African mining industry is proving to be a leader in environmental reporting. De Villiers and Antonites (2003) state that management are becoming more effective and logical in the way they report. They are increasing the amount of qualitative and quantitative data that are beneficial to stakeholders in assessing each mining industry's progress or regress. They have moved away from providing only numerical data but are now explaining in more detail the strategies they put in place to tackle environmental issues. This particular kind of management forms part of an international trend (Blacconiere and Patten, 1994). Environmental disclosures demonstrate whether a mining company has put pumping infrastructures in place to treat the acidic water, whether plans are put in place to reduce the ingress water into borehole extractions and whether an organisation is committed to maintaining the water below the environmentally dangerous level.

Although the above disclosures were made by the various organisations, these were not so substantial as to convince the government that increased regulation would be avoidable. Minister Molewa stated, "The implementation of an environmental levy to be paid by operating mines to cover the costs of the legacies of past mining needs to be investigated and implemented, if feasible". Minister Molewa asserted that as part of the operation set up, in order to prevent mining organisations from polluting South Africa's water source in the Central and Eastern basins, a notice has been released in terms of Section 19 of the National Water Act. In the Western basin, the Water Department has agreed to resolve the situation but, in terms of Section 20 of the National Water Act, the mines responsible for the AMD in this region will be required to repay the Water Department for the amount incurred in remedying the situation (Article 12).

Finally the mining organisations will be accountable to the Department of Water Affairs (DWA) and environmental groups who are concerned about the natural environment. The DWA and other environmental groups need to ensure that the mining organisations will no longer pollute water and will introduce the plans promised in their annual reports and website disclosures.

The Federation for a Sustainable Environment (FSE), a non-governmental organisation that has made the AMD crisis public knowledge and has constantly petitioned for remedial activities to be put in place by the government, issued a report in responding to the AMD crisis. The CEO Mariette Liefferink states that, " the FSE has proposed reverse osmosis plants, due to the fact that they can be erected within twelve weeks," The FSE also recommended that a multi-institution monitoring committee be launched to monitor the progress made by the government and the mining industry.

The mining industry has claimed to have improved monitoring of mine water, groundwater, surface water, subsidence and other geotechnical impacts of mine flooding, in response to FSE's recommended programmes. The industry also willingly made a "donation of R6.9million to purchase massive quantities of lime. This decision is based on evidence that lime corrects the pH of the discharge." The disclosure of the R6.9 million provided the FSE committee members and other environmental groups with the information that shows the mining organisations commitment to respond to the crisis and continue honouring their environmental responsibilities (Article 20).

To demonstrate the fact that environmental groups are focused on the activities of each organisation, Liefferink responded negatively by indicating that not enough water has been treated, which has seen the rising acidic water flowing to the Krugersdorp area. "This is resulting in all the heavy metals, including Uranium, precipitating in the Hippo Dam, which is the first receptor in the Krugersdorp Game Reserve. Since the iron is not removed, it results in secondary chemical reactions with resultant pH shocks. The acidification causes these heavy metals in the Hippo Dam to become mobilized and solubilized. The pH of the last dam in the Krugersdorp Game Reserve, namely the Aviary Dam, after the water has flowed through wetlands, is 4" (Article 20).

The strategies utilised by the mining industry in the media disclosures are expected in an organisation in crisis. The mining industry mainly used repair strategies in interacting with its stakeholders. The papers finding that maintenance strategies were the least of the three type of legitimacies is also to be expected of an industry in crisis. The maintenance strategy is commonly useful for an industry demonstrating the commitment in upkeeping the "social contract" terms. A question, however, arises: had the mining organisations been actively involved in the maintenance environmental disclosures, would this strategy have prevented AMD from reaching crisis proportions? Further research into this subject, by means of a case study or examining organisation plans may be useful in understanding whether an organisation can prevent a crisis by being constantly aware of the changing norms and values of society.

Even though the mining industry primarily used the repair legitimisation tactic, the range of legitimacy techniques has proved to be a finding worth discussing. The mining industry did not completely avoid the event but disclosed environmental information that conformed to stakeholder's values and persuaded society to view AMD as less problematic than it was portrayed to be. Sandeland and Dutton (1981, as cited in Suchman 1995 p.598) stated that "a precipitous crisis leads to a threat-rigidity response that severely impairs decision making and promotes organisational failure."

O'Donovan (2002) states that by using a compliant method, mining organisations are able to depict themselves as practical and remorseful organisations, without having to take full responsibility for the incident and without having to apologise, allowing them to be unconnected with the crisis. A denial strategy was not an option to regain legitimacy as it would not have been taken well by the stakeholders after the event had been silenced for so long.

Suchman (1995 p.598) warns that unless the "explain and educate" or "avoiding panic" methods are "sincere, subsequent revelations may severely deplete the organisation's long-term legitimacy reserves'. Which means that organisations that implement non-ethical ways of regaining their legitimacy may be worse off. Suchman(1995) recommends that an organisation involve the general public "in arriving at cost-benefit appraisals and ethical judgements largely through explicit public discussion, and organisations often can win pragmatic legitimacy by participating vigorously in such dialogues' (Suchman,1995 p.585).The mining industry's "avoid panic" strategy did not meet society's needs in terms of the response they required, therefore, pressure had been put on the mining organisations to implement a more powerful legitimisation technique.

This paper then found a consequential move was made to cognitive legitimacy strategies. According to Suchman (1995, p.585), in contrast to pragmatic legitimacy, cognitive legitimacy 'implicates unspoken orienting assumptions' as 'heated defences of organisational endeavours tend to imperil the objectivity and exteriority of such taken-for-granted schemata'. Suchman (1995 p.598) mentions that if managers cannot devise an account that eliminates moral responsibility, they may nonetheless preserve a small amount of cognitive legitimacy simply by explaining the disruptive events in a way that preserves an otherwise supportive world view. By using a substantial amount of articles to persuade the public not to panic, the mining industry needed to explain and educate stakeholders in order to regain a connection with their relevant publics.

The mining industry also sought to institutionalise a new model as a cognitive strategy to gain legitimacy. Following numerous meetings with the government and the mining organisations, a concerted resolution to the AMD problem was established.
The general public, governmental agencies and environmental groups have agreed that the AMD remedial model will be made up of the following fundamentals:

Mine water collection and conveyance to a central point;
Development of new infrastructure and refurbishment of existing infrastructure to facilitate the collection & treatment of mine water;
Treatment of the mine water which address low pH, high levels of metals and salinity;
Encouraging re-use of treated mine water;
Discharge of treated mine water to meet Resource Quality Objectives; and
Augmentation of stressed river systems. (Article 23)

The cognitive strategy above can be said to relate to resource allocation, as the establishment of models to deal with the AMD problem will require more exhaustive financial and human capital and other resources than the pragmatic strategy.

Surprisingly, the findings also demonstrated that the mining industry used minimal moral, legitimacy strategies. This presents an interesting coincidence as much of the stakeholders discussion for the implementation of environmental reporting arose as a result of corporate social responsibility and moral legitimacy. The mining industry revealed minor social norms and values and environmental responsibility references in the media articles. The minimal moral legitimacy tactics may imply that the mining industry did not value its corporate duty to link their performance and goals to community moral standards; further research into this topic is necessary.

The findings can be said to be consistent with the stakeholder theory, specifically the legitimacy theory rationalisations. The legitimacy strategy coding matrix has been useful in extending the findings of prior studies on the reaction of the mining industry to disclose environmental information to repair their legitimacy after the crisis. The use of symbolic disclosures linking mining operations to a positive base, indicates that when an organisation's legitimacy is threatened, it will increase its level of disclosures and make use of environmental disclosures to manage the various stakeholders and demonstrate that the social contract is intact.

Even though the present study provided further knowledge into the connection between the mining industry's environmental disclosure choices and the recovery of any legitimacy lost, limitations are evident in this study which may reduce the quality of this study's results. Firstly due to the fact that the study focused on an environmentally responsive sector in South Africa which experienced a highly-publicised crisis, the results of this study cannot be generalised. The results of this paper may indicate management bias as legitimacy lost needed desperately to be regained to ensure the industry's survival. The mining industry is said to have a visible effect on the natural environment. Therefore, it is expected that the government, environmental groups and the general public will question the intention and operational activities of mining organisations. According to the concept of organisational legitimacy, mining organisations will not be able to succeed without considering the impact of their actions. Therefore, the findings of this study may not be valid to another South African or International organisation that does not face similar societal pressures. Secondly, in order to determine whether there has been a significant increase in the level of disclosures, a baseline period of 2008-2009 was used: therefore the normal deviation of environmental disclosures had been determined using only two data points.

Taking the above limitations into account, there are ways in which these matters can be resolved by future researchers to provide insight into the response of an organisation after a crisis. The acid mine drainage represents a major environmental incident that received a considerable amount of damaging media interest. It was imperative for the mining industry to manage legitimacy by using positive environmental disclosures and linking them with their operation. Therefore, it could be valuable to take on a similar event study to assess the social or environmental disclosures of an industry that did not receive harmful media attention. Further research could add to the legitimacy theoretical framework by using the coding matrix with other media sources, besides the environmental perspective. Interviews can be performed identifying the motivating reasons why environmental disclosures are made. This present study used Suchman's (1995) coding matrix and the same matrix may be used to determine why an organisation or industry lost legitimacy.

Overall, the mining industry used the environmental disclosures when legitimacy was lost or challenged. A question arises: how did the mining industry get it so wrong that it lost legitimacy in the first place? Perhaps it could have been the fact that the acid mine drainage had been silenced for so long, or a lack of moral strategies or the mismatch between environmental performance and the disclosures made by organisations.

Although a corporate resource, legitimacy is granted by society. Future researchers may perform an examination of society's questioning of legitimacy of mining operations. One could use the present research and determine whether acid mine drainage stakeholder groups questioned the mining industry's environmental performance, thereby prompting the industry to make certain legitimacy choices.

Based on the media articles, it is clear that the general public felt that the mining houses failed to engage with its relevant publics. Whether this can be taken as an intentional tactic, the mining industry was forced to communicate with its stakeholders to ensure its survival. For management to be successful in forming and sustaining equally advantageous stakeholder relationships, they must recognise and appreciate the various environmental pressures on the organisation that is its continued existence.

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Article 1: Acid Mine water affects four provinces

Article 2: Acid mine water on Gauteng oversight

Article 3: Acid mine water threatens Johannesburg

Article 4: Acid water containment measures mooted

Article 5: Acid water plan due in December

Article 6: Acid water puts miner

Article 7: Acid water threatens Johannesburg

Article 8: Acid water

Article 9: Acid mine drainage coming to a dam near you

Article 10: Acid Mine Drainage: Cradle of Humankind

Article 11: Acid mine drainage is an imminent threat

Article 12: Acid mine drainage report released

Article 13: Adding insult to injury: impacts of coal extraction

Article 14: Acid Mine Drainage- the writing on the wall

Article 15: Appeal to parliament to intervene in acid mine drainage

Article 16: At risk: Ground water integrity

Article 17: “Immoral” that generation that pays

Article 18: Cabinet to decide acid mine drainage solution

Article 19: Centre for environmental rights: AMD Report

Article 20: Cleaning the water to drinking standards will cost too much

Article 21: Climate change: what the experts say

Article 22: Coal Miner facing fines of R18.6 million

Article 23: Collaborative solution to acid mine drainage

Article 24: Community takes on planned mine

Article 25: Cradle Heritage status secure

Article 26: Cradle, Hartbeespoort dam and AMD

Article 27: Croc death the result of acid mine drainage

Article 28: DA: Clean-up of acid mine drainage needed

Article 29: Decisive Action ‘imperative’ for Cradle

Article 30: Department warns against "opportunistic groupings"

Article 31: Don't panic over acid mine water

Article 32: Environmental disaster flowing from the West Rand

Article 33: Eskom turns to water

Article 34: Experts to tackle water crisis

Article 35: Fedusa: Govt not serious about acid water

Article 36: Flooding of Grootvlei mine getting worse

Article 37: Force compliance with the National Water Act

Article 38: Gauteng's drinking water at risk

Article 39: GDARD to educate on AMD

Article 40: Get it right or face charges

Article 41: Gold mine ‘polluting stream'

Article 42: Government looking into water tax for mines

Article 43: Government to take action

Article 44: Government, mines partner for conservation

Article 45: Government approves report on acid mine drainage

Article 46: Government working on acid mine drainage

Article 47: Greater intervention needed to tackle acid mine drainage

Article 48: Green constitution or not

Article 49: Grootvlei mine to pump more

Article 50: Help these Hippos

Article 51: Hypocrisy of water week objective

Article 52: Johannesburg safe from acid mine drainage

Article 53: Johannesburg faces health danger

Article 54: Mine has only days to combat acid mine water

Article 55: Mine Waste Solutions doubles interim loss

Article 56: Mone water a threat to Gauteng

Article 57: Mine water report under wraps

Article 58: Mine water looms near surface

Article 59: MPs: Acid water a big problem

Article 60: National Water Week : Together we can do more to save water

Article 61: Non Government organisations urge MP's to act on acid water

Article 62: No political will on acid water

Article 63: Pick your poison

Article 64: Plugging the mess of acid mine drainage

Article 65: Polluter pays for acid mine drainage too

Article 66: Pollution reaches Cradle of Mankind

Article 67: Tackle the issue or face environmental charges

Article 68: South Africa in race against toxic mine water

Article 69: South Africa mulls acid mine water tax

Article 70: Sonjica confirms acid mine drainage and responses pour in

Article 72: State silent on acid mine drainage

Article 73: The acid mine drainage report

Article 74: The mining environment community's alliance

Article 75: The unthinkable happens - environmental devastation for the Vaal

Article 76: Too little & too much from the tax base

Article 77: Too much rain Gauteng water toxic before 2012

Article 78: Treasury proposes tax levy for acid water

Article 79: Treasury mulls Solution for acid mine drainage

Article 80: UASA worried about Johannesburg acid water

Article 81: Uranium water email causes a splash

Article 82: Urgent action urged on acid mine water

Article 83: Water quality problem "appreciated"

Article 84: West rand acid water to be tackled

Article 85: What civil society says on acid mine drainage

Article 86: Who benefits as AMD debate rages

Article 87: Who will pay for rehabilitation?

Article 88: Winde changes direction on acid mine drainage

Article 89: Work on acid mine water underway

Appendix A

Company Name	Word Count 2008	Word Count 2009	Word Count 2011	Percentage Change
African Rainbow Minerals	118	189	630	233%
Alatsa Resources	0	121	120	-1%
Anglo American Plat	550	601	987	64%
Anglo American plc	1920	255	414	62%
AngloGold Ashanti	104	258	364	41%
Aquarius Platinum	371	212	626	195%
Assore Limited	340	563	1761	213%
Bauba Platinum	192	233	308	32%
BHP Biliton Limited	654	815	1707	109%
Buildmax	50	50	1150	2200%
Central Rand Gold	336	578	877	52%
Coal of Africa	178	255	477	87%
Delrand Resources	168	122	190	56%
DRD Gold Limited	1069	122	412	238%
Eastern Platinum Limited	225	266	266	0%
Exxaro Resources	1262	1277	1571	23%
Firestone Energy	14	14	143	921%
Gold Fields	335	338	404	20%
Gold One International	90	98	267	172%
Great Basin Gold	1178	1159	1898	64%
Harmony Gold	524	507	826	63%
Impala Platinum	407	366	656	79%
Infrasors	187	202	306	51%
Jubilee Platinum	0	0	152	-
Keaton Energy	449	706	1074	52%
Lonmin Plc	938	1316	2781	111%
Merafe Resources	2787	2724	3415	25%
Miranda		345	432	25%
Northam Platinum	780	601	823	37%
Pan African	376	436	571	31%
Petmin	217	227	258	14%
RandGold	0	20	62	210%
Rockwell Diamonds	0	0	98	-
Sentula Mining	134	185	680	268%
Sephaku Holdings	0	52	575	1006%
Simmer and Jack Mines	2177	2726	3286	21%
Tawana Resources	25	27	164	507%
Thabex Limited	109	103	123	19%
Trans Hex Group	590	640	801	25%

Uranium One	118	123	264	115%
Village Main Reef	294	234	340	45%
Wescoal Holdings	0	0	134	-
Witwatersrand	158	231	347	50%

Appendix B: Split per Mining sector

Gold Mining	5681	6707	9654
AngloGold Ashanti	104	258	364
Central Rand Gold	336	578	877
DRD Gold Limited	109	122	412
Gold Fields	335	338	404
Gold One International	90	98	267
Great Basin Gold	1178	1159	1898
Harmony Gold	524	507	826
Pan African	376	436	571
RandGold	0	20	62
Simmer and Jack Mines	2177	2726	3286
Village Main Reef	294	234	340
Witwatersrand	158	231	347

Platinum and Precious Metals	3680	3822	6857
Anglo American Plat	550	601	987
Aquarius Platinum	371	212	626
Bauba Platinum	192	233	308
Eastern Platinum Limited	225	266	266
Impala Platinum	407	366	656
Jubilee Platinum	0	0	152
Lonmin Plc	938	1316	2781
Northam Platinum	780	601	823
Petmin	217	227	258

Coal	1934	2288	4406
Buildmax	45	50	1150
Coal of Africa	178	255	477
Exxaro Resources	1262	1277	1571
Keaton Energy	449	706	1074
Wescoal Holdings	0	0	134

Diamonds and Gemstones	891	892	1376
Delrand Resources	168	122	190
Rockwell Diamonds	0	0	98
Tawana Resources	25	27	164
Thabex Limited	108	103	123
Trans Hex Group	590	640	801

General	4842	5349	10153
African Rainbow Minerals	118	189	630
Anglo American plc	228	255	414
Assore Limited	340	563	1761
BHP Biliton Limited	654	815	1707
Firestone Energy	13	14	143
Infrasors	187	202	306
Merafe Resources	2787	2724	3415
Petmin	217	227	258
Sentula Mining	134	185	680
Sephaku Holdings	47	52	575
Uranium One	118	123	264

Appendix C : Legitimation strategies coding matrix results

	Gain legitimacy	Maintain legitimacy	Repair Legitimacy
Pragmatic	<u>Conform to demands</u> 1." "We would need to make sure we have new pump stations operational by March 2012... this is very feasible. By [this date] we should have the pump stations established and be able to move water out of the basin," he told journalists." (Article 3) 2. "acknowledged and accepts that acid mine drainage is a problem needing to be addressed urgently. This should be done in a co-ordinated manner between a range of stakeholders that included the mining industry and government should always play a leading role."(Article 4) 3. "The report now provides for "stakeholder engagement" to take place." (Article 19) 4. "mining organisations have made some progress in addressing the acid mine drainage issue, there is now a Remediation Action Plan for the Wonderfonteinspruit catchment area and a huge amount of research has been done on the issue of acid mine drainage" (Article 32) 5."The mining company plans to avert the impending crisis and stabilise the situation, as well as addressing current gaps in the understanding of AMD problems in the priority areas and their potential impacts on the environment." (Article 40) 6."Directives were also handed to mines operating in the West Rand basin of Gauteng in 2006 for them to produce self-sustainable treatment for acid mine water. (Article 62)" <u>Select markets</u> <u>Advertise</u> <u>Image enhancement</u> 1.The measures in place to deal with the present environmental emergency,	<u>Monitor tastes by consulting experts</u> 1. The report was presented to Minister of Water and Environmental Affairs Edna Molewa, Minister of the National Planning Commission Trevor Manuel, Minister of Science and Technology Naledi Pandor and Deputy Minister of Mineral Resources Geoffrey Oliphant.(Article 18) 2. The team also assessed cost and possible partnerships with the private sector. (Article 18) 3. Recommendations are benchmarked on some countries that have experience with AMD – such as Canada and the United States of America.(Article 18) 4 "Inter-ministerial committee (IMC) dealing with Gauteng's acid mine water crisis has called on some of South Africa's top experts to help find a solution to the problem. The expert team was drawn from the Council for Scientific and Industrial Research, the Water Research Commission, the Council for Geoscience, and the departments of science and technology and water and environmental affairs." (Article 34) 5 "The best way to tackle this problem is through collaboration by all stakeholders." (Article 56)	<u>Deny</u> 1. "In the eastern basin - located roughly below the town of Nigel - there was currently no risk because the water was 700m below the surface. There were also no immediate problems with the central basin, directly below Johannesburg" (Article 31). 2. "The study has just been completed, and it was concluded that no risks of mine water flooding any basement structure in the CBD of Johannesburg exist," (Article 52) 3. "Past mine owners are liable for environmental degradation" (Article 85) <u>Disclaimer</u> 1. In Central Rand Gold's interim results, Johan du Toit, the CEO, conveyed that "there is an understanding between all stakeholders, on the interim solution", but also that "the liability to resolve the AMD **problem would reside with the State**, requiring a contribution of approximately US$19.8 million (R145-million)." The remaining 30% liability would be funded by existing active mining operations in the area, according to du Toit.(Article 14) 2. "It's government's problem" (Article 48) <u>Deflection</u> 1. Nick Holland, CEO of GoldFields said that South Africa would remain a significant participant for the next 20 years to 30 years, with the 50-year South Deep outlasting all the other megamines. He spoke on the occasion of the granting R26-million sponsorship of the mining engineering faculties of Johannesburg's two main universities to boost the mining engineering skills.(Article 20)

	is a donation of R6.9million to purchase massive quantities of lime. This decision is based on evidence that lime corrects the pH of the discharge. 2. Gauteng has a world class water system boosted by importing water from places such as KwaZulu-Natal and Lesotho. The water is purified to standards that comply with the department's standards and these standards are fully aligned with the World Health Organisation guidelines. (Article 30) 3. "Decanting mine water should be seen as an opportunity. Untreated acidic mine water has been used in the past by municipal sewage works in the Central Rand to aid nitrate digestion. Given the number of sewage works in Johannesburg, and the volume of sewage to be treated, this alone could perhaps accommodate most, if not all, of the decanting water, resulting in no treatment costs, while saving clean water otherwise used for this purpose." (Article 52) 4. The mining organisations Mintails, DRDHold, Rand Uranium, and Central Rand Gold have entered into mutual understandings with Western Utilities Corporation and have added around R500-million to the infrastructure contribution. (Article 67) 5.. "We are working around the clock to curb the potential dangers posed by the impact of acid mine drainage in the Witwatersrand mining area. "Important progress" had been made." (Article 89) 6. AMD was a valuable resource that could be turned into a scarce resource - potable water. "If we do that, we believe an economically viable business can be created. This business can attract external funding and that has been demonstrated by the Western Utilities Corporation (WUC) feasibility work undertaken. (Article 82)	<u>Protect exchanges</u> 1. "In June 2009, the level of the polluted acid mine drainage lay about 80cm from the surface. With extraordinarily heavy rainfall in the last weeks, the water level has risen dramatically. Mr Rex Zorab consultant to Rand Uranium is quotes as saying that the rising water is overwhelming." (Article 11- communicate honestly) 2. This expanse has been filling with water, and the water has become as acidic as battery acid. This water, containing contaminants including Uranium, is set to spill over and destroy water ways and the environment. (Article 11- communicate honestly) 3. "Information and evidence collected include printouts of the tests taken at key places along various rivers showing the E.coli and heavy metal counts present." (Article 37- communicate honestly) 4 "From visiting the area we can see the problem is more serious than expected," (Article 59 – Communicate honestly)	<u>Avoid panic</u> 1."Water levels are not a level where it is a threat to us."(Article 1) 2. "The situation could not be seen as a crisis." (Article 1) 3. "We want the South African public to know that Gauteng will not run out of water in the near future, it is also incorrect to say that 80% of South Africa's water will be so polluted that it will not be possible for it to be treated to potable quality and that the Gauteng province will be worst affected as the Environment Conservation Association claims. (Article 30) 4. "We are now working together to find sustainable solutions to the challenges posed by acid mine drainage. We will not allow the situation to get out of hand; it will not reach crisis proportions," (Article 46) 5. "South Africans should not be panicking yet" (Article 68) 6. "It's urgent but it's not a crisis," (Article 68) 7. "We need to ensure that we have immediate water pumping across the three [affected] basins, and we will be working continuously to ensure that we have a permanent solution to the problem," (Article 71) 8. "We want to assure South Africa that there is no need to panic at the moment, as it remains our responsibility to ensure the safety of our water systems in the country." (Article 71) 9. "It was not a valid reason to question the quality of Potchefstroom's tap water." (Article 81) 10. "The risks of AMD to our surface- and groundwater resources are 'exaggerated'." (Article 86)

Moral	Conform to ideals 1. “AMD [acid mine drainage] intervention and management measures are undertaken in the Western, Central and Eastern Basins as a matter of urgency.”(Article 3) 2. “The mining industry will oversee a short-term clean-up project.” (Article28) 3 “we have agreed to address four critical problems to achieve the said outcome agreement goals.” (Article 44) 4 “Repairs had been done to pipe columns in the water treatment plant and Eskom would be giving the go-ahead for additional power to be used in the extra pumping. We are opening a fifth and sixth column and this will increase the pumping capabilities."(Article 49) Persuade 1. “The government has set aside millions to tackle the problem.” (Article 1) 2. “We are presently hard at work with mining operators in search of a lasting solution. (Article 16) 3. “We want to give all South Africans the assurance that this matter is receiving attention; that the science is exceptionally good on this matter; and that there is actually no cause for panic about it.". (Article 3) 4”the scientific work that was being done was already at an advanced Stage.” (Article 46) 4. In July, the water affairs department warned of catastrophic results if Joburg's groundwater was contaminated. "We will not allow that - it's definitely not going to happen. It will not decant in the city of Johannesburg," (Article 68) 5. "That should be sufficient to stop the... decant, as it is now ," (Article 84)	Monitor ethics 1. "As part of the implementation plan, which officials are working on, a notice will be published in terms of Section 19 of the National Water Act to previous and existing mining organisations in the Central and Eastern basins, preventing these mines from polluting the water resources as a result of their activities” (Article 12) 2. “Correct procedures would have to be followed to investigate the matter and all the relevant stakeholders need to agree on the remediation process.” (Article 43) Protect propriety 1."Clear steps already in place to tackle it.” Central Rand Gold have already ordered the pumps necessary to prevent the rising water from reacting the levels where they intend to mine," (Article 1) 2. Acid mine drainage is globally cited as being second only to climate change in its risk to the environment. And acid mine drainage, without question is a consequence of our activities. (Article 17) 3. “Work on dealing with the problem in the western basin would start "immediately". (Article 31) 4. “Rand Uranium has acted responsibly and continued to pump and treat water from the Western Basin.” (Article 32) 5. “The mining company buys chemicals to treat 80 megalitres of polluted mine water.” (Article 41) 6. "We are visiting the areas so we can assess what needs to be done to fix the problem." (Article 58 – police responsibility) 7. “Mines are actually paying for water reclamation and the reduction of acidity.” (Article 76)	Excuse / Justify 1. “massive pressures to develop the huge coal resource in western Limpopo, estimated to contain nearly half our national coal reserve. Mining investors see massive opportunities in the region.” (Article 13) 2. “The increased rainfall over the last few months had considerably raised the level of the acidic mine water in the underground mined-out pockets of the Witwatersrand, regardless of our actions.”(Article 29) 3 “We are supposed to be receiving a R5m subsidy from the state, but we have not received this since October last year," said Zondwa Mandela, Aurora's managing director.” (Article 54) Restructure 1. Central Rand Gold made a decision to indefinitely suspend underground mining operations in late May this year. As a result of the uncertainty facing the company, the size of the workforce has been reduced by almost 73%. A retrenchment program will result in about 159 staff out of 218 leaving the firm between July and September. "The retrenchments were necessary in light of the frim's need to preserve capital while assessing its options regarding the future," (Article 6) 2.”First Uranium recently announced that it was restructuring its business to focus on gold production. It said a new operating plan could result in the cutting of almost half its workforce at its Ezulwini operations.” (Article 55)

Cognitive	<u>Conform to models</u> 1. “There are certain commitments, timelines and deadlines that the department of water and environmental affairs have committed to” (Article 5) 2. Following a series of consultative meetings the parties agreed on co-operation, in the form of a partnership between Government and the Mining Houses (Public- Private Partnership Model) so as to formulate a collaborative solution to the AMD problem. The stakeholders have agreed that the model will consist of the following key elements: - Mine water collection and conveyance to a central point; - Development of new infrastructure and refurbishment of existing infrastructure to facilitate the collection & treatment of mine water; - Treatment of the mine water which address low pH, high levels of metals and salinity; - Encouraging re-use of treated mine water; - Discharge of treated mine water to meet Resource Quality Objectives; and - Augmentation of stressed river systems. (Article 23) 5. Rand Uranium and Mogale Gold were appointed to commence the treatment and reduction of the acid water as an emergency measure. "These two mining houses are equipped with the necessary pumping and treatment facilities to deal with this emergency in the interim. They have already started to maximise the pumping capacities of their treatment plants in order to reduce the uncontrolled overflow presently occurring in the Western Basin. In addition, they are treating the overflow from the Western Basin to minimise environmental impacts downstream of the discharge point." (Article 70) 6. Water is pumped from the three priority basins to maintain water levels at least below the relevant	<u>Monitor outlooks</u> 1. “In September the mining sector accepted government's proposed public-private partnership for environment conservation, according to the environmental affairs department's delivery agreement.” (Article 8) 2. “We continue to support the inclusion of additional procedural safeguards in areas of particular sensitivity.”(Article 74) <u>Project assumptions</u> 1. "This environmental problem is second (in SA) only to global warming in terms of its impact, and poses a serious risk to the Witwatersrand as a whole. At the rate it is rising, the basin (under Johannesburg) will be fully flooded in about 18 months." (Article 7) 2. “Ways to make the pollution less concentrated by regularly letting water out of the Vaal Dam are now being considered” (Article 38) 3.”Initial estimations were that government may need up to R218 million for a new pump station and pipeline, and to upgrade existing waterworks.” (Article 45)	<u>Explain and educate</u> 1. "Gauteng is the heaviest affected province due to the mines operating from some time back... but it touches on the North West, the Free State and the Northern Cape," (Article 1) 2. Millions of litres of heavily polluted acid mine drainage continue to be decanted into streams connected to both the Vaal and Crocodile River systems and groundwater systems on a daily basis, with devastating consequences for communities and the environment.(Article 15) **3** The high rainfall in the region directly impacts the level of the AMD water, and therefore the decant into the receiving environment. (Article 26). 4.“Acid mine drainage is not only associated with surface and ground water pollution and degradation of soil quality, it also harms aquatic sediments and fauna and allows heavy metals to seep into the environment, she said.” (Article 36) 5. “AMD occurs when old shafts and tunnels fill up, leading to underground water oxidising with the sulphide mineral iron pyrite, better known as fool's gold. The acid water is believed to be currently about 600m below the city's surface, but was rising at a rate of between 0.6m and 0.9m a day.” (Article 45) 6 “The potential volume for AMD for the Witwatersrand goldfield alone amounts to an estimated 350 Mℓ/d. This represents 10% of the potable water supplied by water utility Rand Water to municipal authorities for urban distribution in Gauteng and the surrounding areas, at a cost of R3 000 for every one-million litres,” (Article 47) 7. “Acid mine drainage affects the Gauteng, Mpumalanga, North West and Free State provinces. It results from the oxidation of sulphide minerals which are exposed in a mine or are present in dust in underground shafts and tunnels. As a result of its acidity, the water dissolves rock material and may contain a range of toxic metals.” (Article57)

	Environmental Critical Levels or, by agreement with stakeholders, the lowest level of underground activity within the basin. (Article 73) 7. “The Department of Mineral Resources initiated research under the umbrella of the Witwatersrand Water Ingress Project and the Council for Geoscience was contracted to undertake this research on behalf of the Department. The focus of the research is the existing and potential problems relate to mine water management and acid mine drainage in the Witwatersrand. Remedial actions and strategies have been proposed. “ (Article 83) Select labels Institutionalize		8. "Millions of litres of heavily polluted acid mine drainage continue to be decanted into streams connected to both the Vaal and Crocodile River systems and groundwater systems on a daily basis, with devastating consequences for communities and the environment," (Article 61) 9. “The heavy rains over the past two weeks have filled the underground mined-out pockets on the West Rand to such an extent that there are now about 40 million litres of sour mine water in the Tweelopiespruit each day.” (Article 66) 10. "SA has a total useable groundwater resource of 10 billion cubic metres in non-drought years. Compared to the national resource found in rivers (49 McM), this groundwater fraction is not large. Which is all the more reason we need to protect is given that most of the groundwater is found in the dolomites, some of which are affected by Acid Mine Drainage." (Article 77) 11. “The acid water is currently about 600m below the city's surface, but is rising at a rate of between 0.6m and 0.9m a day” (Article 80). 12. “The main pollution sources of void water are not located underground but on surface, (this could include tailings and other mining residue deposits which cover a large percentage of the surface catchment above the voids.” (Article 88)

		Adjusted 2008			Mean	Variance	t-value	p-value	5%	1%
Total		16 813	18 831	32 090	17 822	2 037 133	14.14	0.022478	reject	accept
Company Name	**Word Count 2008**	**Word Count 2008_adj**	**Word Count 2009**	**Word Count 2011**						
African Rainbow Minerals	118	118	189	630	154	2 521	13.42	0.023671	reject	accept
Anglo American Plat	550	550	601	987	576	1 301	16.14	0.019700	reject	accept
Anglo American plc	1920	228	255	414	242	355	12.94	0.024546	reject	accept
AngloGold Ashanti	104	104	258	364	181	11 858	2.38	0.126776	accept	accept
Aquarius Platinum	371	371	212	626	292	12 641	4.21	0.074274	accept	accept
Assore Limited	340	340	563	1761	452	24 865	11.74	0.027038	reject	accept
Bauba Platinum	192	192	233	308	213	841	4.66	0.067307	accept	accept
BHP Biliton Limited	654	654	815	1707	735	12 961	12.08	0.026289	reject	accept
Buildmax	50	45	50	1150	47	14	422.36	0.000754	reject	reject
Central Rand Gold	336	336	578	877	457	29 282	3.47	0.089286	accept	accept
Coal of Africa	178	178	255	477	217	2 965	6.77	0.046706	reject	accept
Delrand Resources	168	168	122	190	145	1 058	1.96	0.150400	accept	accept
DRD Gold Limited	1069	109	122	412	116	81	46.53	0.006840	reject	reject

Eastern Platinum Limited	225	225	266	266	246	841	1.00	0.250000	accept	accept
Exxaro Resources	1262	1262	1277	1571	1 270	113	40.20	0.007917	reject	reject
Firestone Energy	14	13	14	143	13	1	177.48	0.001793	reject	reject
Gold Fields	335	335	338	404	337	5	45.00	0.007072	reject	reject
Gold One International	90	90	98	267	94	32	43.25	0.007358	reject	reject
Great Basin Gold	1178	1178	1159	1898	1 169	181	76.79	0.004145	reject	reject
Harmony Gold	524	524	507	826	516	145	36.53	0.008712	reject	reject
Impala Platinum	407	407	366	656	387	841	13.15	0.024166	reject	accept
Infrasors	187	187	202	306	195	113	14.87	0.021379	reject	accept
Jubilee Platinum	0	0	0	152	-	-			reject	reject
Keaton Energy	449	449	706	1074	578	33 025	3.86	0.080613	accept	accept
Lonmin Plc	938	938	1316	2781	1 127	71 442	8.75	0.036216	reject	accept
Merafe Resources	2787	2787	2724	3415	2 756	1 985	20.94	0.015192	reject	accept
Northam Platinum	780	780	601	823	691	16 021	1.48	0.189100	accept	accept
Pan African	376	376	436	571	406	1 800	5.50	0.057249	accept	accept
Petmin	217	217	227	258	222	50	7.20	0.043929	reject	accept
RandGold	0	0	20	62	10	200	5.20	0.060475	accept	accept

Sentula Mining	134	134	185	680	160	1 301	20.41	0.015582	reject	accept
Sephaku Holdings	0	47	52	575	49	15	193.63	0.001644	reject	reject
Simmer and Jack Mines	2177	2177	2726	3286	2 452	150 701	3.04	0.101156	accept	accept
Tawana Resources	25	25	27	164	26	2	138.00	0.002307	reject	reject
Thabex Limited	109	109	103	123	106	18	5.67	0.055600	accept	accept
Trans Hex Group	590	590	640	801	615	1 250	7.44	0.042529	reject	accept
Uranium One	118	118	123	264	121	13	57.40	0.005545	reject	reject
Village Main Reef	294	294	234	340	264	1 800	2.53	0.119672	accept	accept
Wescoal Holdings	0	0	0	134	-	-			reject	reject
Witwatersrand	158	158	231	347	195	2 665	4.18	0.074779	accept	accept
Alatsa Resources	0	0	121	120						
Miranda	0	0	345	432						
Rockwell Diamonds	0	0	0	98						