

The impact of environmental accounting compliance on share prices of listed companies

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“Verder het Jesus vir sy dissipels gesê: “Daarom sê ek vir julle: moet julle nie bekommer oor julle lewe, oor wat julle moet eet nie, of oor julle liggaam, oor wat julle moet aantrek nie. Die lewe is tog belangriker as kos en die liggaam as klere. Kyk na die kraaie: hulle saai nie en hulle oes nie; hulle het geen spens of skuur nie, maar God sorg vir hulle. Julle is tog baie meer werd as voëls. Trouens, wie van julle kan deur hom te bekommer sy lewe met een uur verleng? As julle nie eens so klein dingetjie kan regkry nie, waarom bekommer julle julle oor die ander dinge?

“Kyk hoe groei die lelies: hulle swoeg nie en hulle maak nie klere nie, maar Ek sê vir julle: Selfs Salomo in al sy prag was nie geklee soos een van hulle nie. As God die gras van die veld, wat vandag nog daar is en môre in die vuur gegooi word, so mooi maak, hoeveel te meer sal Hy julle versorg, julle kleingelowiges! Julle moet julle ook nie gedurig afvra wat julle gaan eet of drink nie, en julle moenie besorg wees nie. Dit is alles dinge waaroor die ongelowiges in die wêreld begaan is, maar julle het 'n Vader wat weet dat julle dit nodig het. Beywer julle vir Sy koningryk, dan sal Hy julle ook hierdie dinge gee.

“Moenie bang wees nie, klein kuddetjie, want dit was die van julle Vader om die koningryk aan julle te gee.

“Verkoop julle besittings en gee bydraes vir die armes. Skaf vir julle 'n beurs aan wat nie leeg raak nie, 'n onuitputlike rykdom in die Hemel, waar geen dief dit kan bykom en geen mot dit kan verniel nie. Waar julle skat is daar sal julle hart ook wees” (Bybel, 1986:100).

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SUMMARY

Background: Sustainable development is the buzzword of the decade, yet developing countries struggle to comply with environmental guidelines. A study was done to determine the possibility of financial gain by means of share price prosperity as a result of compliance with environmental accounting principles.

Objective: To investigate the relationship between the commitment to environmental accounting principles and the share price of Main Board listed companies on the Johannesburg Stock Exchange.

Design: A quantitative, cross-sectional design with descriptive, explanatory and contextual elements was undertaken.

Setting and Sample: An all-inclusive sample of the announcements of the Main Board listed companies of the Johannesburg Stock Exchange between 1 June 2008 and 1 June 2013 was used, as well as a stratified random sample of 32 companies – 16 as listed on the SRI Index and 16 not.

Measurements: Data related to compliance with environmental accounting principles were correlated with share price fluctuations of Main Board listed companies. T-tests were done to determine whether a correlation exists between compliance with environmental accounting principles and fluctuations in share price.

Results: 56 instances of upward trends and 80 instances of downward trends after one month followed announcements that included compliance to environmental accounting principles (one constant and one unknown). 52 instances of upward trends and 54 instances of downward trends after one year followed these announcements (30 unknown). 48 out of 336 listed companies (14%) announce environmental accounting principle compliance with their shareholders. More announcements referring to environmental accounting compliance were posted in 2012 and 2013 ($n = 17$ and $n = 22$ averaged for six months) compared to those in 2008 to 2011 ($n = 9$; $n = 15$; $n = 14$ and $n = 15$ averaged for six months). 56% of companies complying with environmental

accounting principles are from the mining industry. 39.19% of principles complied with was within the diverse principle division. P-values derived from t-tests done to investigate correlations between share price and compliance with environmental accounting principles on various levels all revealed P-values of more than 0.25.

Conclusions: No statistically significant correlation could be made between compliance with environmental accounting principles and fluctuations in share price. There is low divulgence of compliance practices to shareholders from mentioned companies. An upward trend for compliance with environmental accounting principles is noted during the past five years. The mining industry showed the greatest compliance with these principles when judged according to divulgence of compliance by means of announcements to their shareholders as well as when judged according to stance on the SRI Index.

Key words: Environmental accounting; share price; JSE listings.

UITTREKSEL

Agtergrond: Volhoubare ontwikkeling is die gonswoord van die dekade. Ontwikkelende lande sukkel egter om aan omgewingsriglyne te voldoen. 'n Studie is geloods om die moontlikheid van finansiële wins deur middel van aandeelprys welvarendheid as gevolg van toewyding aan omgewings-rekeningkundige beginsels te ondersoek.

Uitkoms: Om die verhouding tussen toewyding aan omgewings-rekeningkundige beginsels en die aandeelprys van Hoofbord genoteerde maatskappy van die Johannesburgse Effektebeurs te ondersoek.

Ontwerp: 'n Kwantitatiewe, deursnit-ontwerp met beskrywende, omskrywende en kontekstuele elemente is onderneem.

Milieu en Deelnemers: 'n Alles-insluitende steekproef van alle aankondigings deur die Hoofbord genoteerde maatskappye van die Johannesburgse Effektebeurs tussen 1 Junie 2008 en 1 Junie 2013 is gebruik, asook 'n gestratifiseerde lukraak steekproef van 32 maatskappye waarvan 16 op die SRI Indeks genoteer is en 16 nie.

Mates: Data verwant aan toewyding aan omgewings-rekeningkundige beginsels is gekorreleer met aandeelprysfluktuasies van die Hoofbord genoteerde maatskappye. T-toetse is uitgevoer om te bepaal of daar 'n verhouding tussen toewyding aan omgewings-rekeningkundige praktyke en aandeelprysfluktuasies bestaan.

Resultate: 56 opwaartse neigings en 80 afwaartse neigings is waargeneem een maand opvolgend van die aankondiging wat die toewyding aan omgewings-rekeningkundige beginsels aangedui het (een konstant en een onbekend). 52 opwaartse neigings en 54 afwaartse neigings het een jaar na hierdie aankondigings gevolg (30 onbekend). 48 van die 336 genoteerde maatskappye (14%) kondig toewyding aan omgewings-rekeningkundige beginsels aan hulle aandeelhouers aan. Meer van hierdie aankondigings was in 2012 en 2013 gemaak ($n = 17$ en $n = 22$ gemiddeld vir ses maande) in vergelyking met 2008, 2009, 2010 en 2011 ($n = 8$; $n = 15$; $n = 14$ en $n = 15$ gemiddeld vir ses maande). 56% van maatskappye wat toewyding aan omgewings-

rekeningkundige beginsels aandui maak deel uit van die myn-industrie. 39.19% van beginsels waaraan toewyding getoon word verteenwoordig die diverse beginsel afdeling. P-waardes, afgelei van T-toetse gedoen om 'n verhouding tussen toewyding aan omgewings-rekeningkundige praktyke en aandeelprysfluktuasies te bepaal op verskeie vlakke, was almal meer as 0.25.

Gevolgtrekking: Geen statisties relevante korrelasie kon tussen toewyding aan omgewings-rekeningkundige beginsels en aandeelprysfluktuasies gevind word nie. Verklaring van toewyding aan hierdie beginsels word nie geredelik aan die aandeelhouders van hierdie maatskappye gemaak nie. Daar bestaan 'n opwaartse neiging in die hoeveelheid toewydingspraktyke oor die afgelope vyf jaar. Die myn-industrie wys die hoogste mate van toewyding tot hierdie beginsels wanneer beoordeel beide op die mate van verklaring in die vorm van aankondigings aan hul aandeelhouders en hul teenwoordigheid op die SRI Indeks.

Sleutelwoorde: Omgewings-rekeningkunde; aandeelprys; JSE notering.

CHAPTER 1

1.1 INTRODUCTION

In 1987, the Brundtland Report defined sustainable development as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Pelletier & Tyedmers, 2011:342). The concern for the environment has been repeatedly expressed over the years in a series of international summits and consensus (Ayoola, 2011:244). Lei and Zhou (2012:603) suggest that the only real solution will be a contraction of national economies, a decline in overall energy consumption and productivity and reducing populations at the same rate as the decrease in available annual energy – in short to consume less energy than is available. Thus the probability of long-term human survival is dependent on a decreasing development style or the equivalent reduction in resource consumption. Pelletier and Tyedmers (2011:342) agree that cumulative metabolic throughput of the industrial society greatly exceeds the resource provisioning and waste assimilatory capacity of global ecosystems.

The rising prominence of environmental accounting frameworks reflects increasing awareness of the pressing necessity of managing both for eco-efficiency and environmental dimensions of the material/energy flows and emissions that underpin all economic activity (Pelletier & Tyedmers, 2011:342). Accordingly, most developed countries of the world developed environmental accounting practices voluntarily (Ayoola, 2011:246). However, this is not the case in developing countries and this leads to more and more pressure globally to mandate principles for environmental accounting.

Seven priorities in environmental accounting principles exist (European Union, 2013:1), including biodiversity, using resources efficiently, water, air, waste, funding for a greener future and diverse practices for environmental conservation. Devotion to betterment in any of these priorities with the definition of environmental accounting as provided by the United Nations (2001:3) in mind is seen as compliance with environmental accounting principles. The United Nations (2013:1) describes environmental accounting as a

combined approach which provides for the transition of data from financial accounting and cost accounting to increase material efficiency, reduce environmental impact and risk and reduce costs of environmental protection.

However, the cost implication of adopting environmental accounting principles could be a hampering factor in advocating for compliance therewith. According to Comyn (2013:1) companies live or die by their share price. Thus, if a correlation between the implementation of environmental accounting principles and share price could be found, companies would be more lenient in terms of compliance with those principles. Dawson (2011:29) states that retail customers and consumers will expect of manufacturers to scrutinise their environmental impact. This could very well imply that shareholders will be more prone to invest in companies that value environmental accounting principles, thus circling back to an increase of share price due to rising demand for the applicable company's shares.

Comyn (2013:1) explains the reasons for companies' management to highly value the share price of their companies. It includes the following:

- The company often owns a portion of its shares listed on the stock exchange.
- The stable support of shareholders is bought with market stability in the form of share prices. Therefore the continued loyalty of these shareholders could be earned with good or stable share prices. Horowitz (2011:1) agrees that companies can be judged according to share price.
- Financing for different projects within the company is dependent on outside funds which is influenced by the credit-rating as enforced by stable or growing share prices; and
- Self-sufficiency and survival as an independent company are dependent on share prices not deteriorating to a level of buy-out.

Through this research, an attempt will be made to prove to companies within South Africa that environmental accounting principles are not only implemented to the detriment of organizational wealth, but rather, that commitment to these principles may very well lead to greater investor loyalty, with all the accompanying advantages.

1.2 PROBLEM STATEMENT

Environmental accounting is becoming a global trend as the concern for the environment demands more and more attention. The only road to sustainability is to reduce overall energy consumption. Thus, to ensure human survival, resources need to be protected. Environmental accounting principles reflect the awareness of this need for diminished resource misuse. However, this trend is not adopted readily by developing countries such as South Africa. This could partially be blamed on the cost of implementation of environmental accounting principles. Due to companies' high regard of their share price, the incentive of prospering share price could prove valuable in promoting compliance with environmental accounting principles. Thus, should proof exist that commitment to environmental accounting principles from leading companies influences their share prices positively, this trend could be advocated for. Such proof, however, does not exist within the South African context and thus is pursued in this research.

1.3 MAIN OBJECTIVE

The main objective of this study is to investigate the relationship between the commitment to environmental accounting principles and the share price of listed companies.

1.4 SUB-OBJECTIVES

In order to achieve the main objective the following sub objectives were identified:

- To describe environmental accounting principles as being committed to by the Main Board Listed companies of the Johannesburg Stock Exchange (JSE) in South Africa.
- To describe stock price fluctuations as experienced by the same Main Board Listed companies of the Johannesburg Stock Exchange (JSE) in South Africa since their commitment to environmental accounting principles; and

- To determine whether there is a relationship between the commitment to environmental accounting principles and the share price of sampled Main Board Listed companies of the Johannesburg Stock Exchange (JSE) in South Africa.

1.5 CONCEPT CLARIFICATION

1.5.1 Environmental accounting

Environmental accounting is defined as the practice of accounting for all the contributing factors that result in an existing or potential impact to the environment (Marks, 2011:1).

1.5.2 Share price

According to Collins English Dictionary (2013a:1) a share price is defined as the price of an individual share in a company. A share is defined as any the equal parts, usually of low par value, into which the company is divided: Ownership of shares carries the right to receive a proportion of the company's profits (Collins English Dictionary, 2013b:1).

1.5.3 Listed companies

A listed company in this study is a company listed on the Main Board of the Johannesburg Stock Exchange (JSE). This entails a company, any class of whose securities is listed and that complies with the listing requirements set out by the JSE (Johannesburg Stock Exchange, 2013:10).

1.6 RESEARCH DESIGN

This study will be quantitative in nature for the following reasons (Brink, 2006:11):

- It will focus on a small number of concepts (environmental accounting and share price).
- There is a pre-conceived idea about how the concepts are interrelated (hypotheses are formulated).
- Constant measures are used to collect data (share price differences correlated with commitment to environmental accounting principles).

- The information is collected under conditions of control (no manipulation of data is possible due to the retrospective nature of the study); and
- Statistical procedures are used in analyses.

According to Levin (2006:24) cross-sectional designs are done at one time point or over a short period. They are usually conducted to estimate the prevalence of the outcome of interest for a given population (Levin, 2006:25). This study is proposed to be cross-sectional as it will be conducted to estimate the prevalence of positive or negative influence on share price in correlation with commitment to environmental accounting principles.

Different strategies are added to the research, namely descriptive, explanatory and contextual. The study is descriptive in that it is used to identify a phenomenon of interest, identify variables within the phenomenon, develop definitions of the variables and describe variables in a study situation (Burns & Grove, 2009:696). The phenomenon of interest is the relationship between the different variables, namely commitment to environmental accounting as an independent variable and share price as dependent variable. Descriptive studies are also called observational, because you observe the sample without otherwise intervening (Hopkins, 2008:2). Here, observation will be made retrospectively regarding the influence that commitment to environmental accounting had on share price.

Closely related to the descriptive element is a hypothesis of how the different concepts, namely commitment to environmental accounting principles and share price are interrelated. This correlates with the definition for explanation as is given by Burns and Grove (2009:13), saying that explanation clarifies the relationships among phenomena and clarifies why certain events occur. Furthermore, this study focuses on the Main Board Listed companies of the Johannesburg Stock Exchange (JSE), thus making it contextual to the South African setting.

Lastly, this study is retrospective, as the outcome of interest had already occurred at the time the study is initiated (De Vaus, 2012:1). Thus, this study will allow the researcher

to formulate ideas about possible associations or relationships (De Vaus, 2012:1) in that a hypothesis regarding the influence of commitment to environmental accounting principles on share price will be tested.

1.7 RESEARCH METHOD

According to Welman, Kruger and Mitchell (2005:10) quantitative research uses structured methods to evaluate objective data. The research method includes two separate steps. The aim of these two steps is to determine the company's stance of compliance with environmental accounting principles from a shareholder's perspective by looking at information regularly available to shareholders in the form of announcements made by the company; and from a more formal JSE rating perspective by looking at compliance with SRI (Socially responsible investment) Index regulations respectively.

1.7.1 Data collection

Data collection will take place through two legs of retrospective analysis of sampled companies' information as obtainable through the McGregor Database. Firstly, information on commitments made as stated in announcements towards environmental accounting principles (e.g. protection of biodiversity, using resources efficiently, commitment to prevention of water and air-pollution, minimising waste, funding for environmental projects etc.) will be recorded and correlated with the company's share price fluctuations. Thus data collection occurred on two informational areas of a company simultaneously. This is done to determine the shareholders' view of the company as painted by the information given through announcements. Secondly, share price data of a sample of companies formally listed on the SRI Index was collected together with share price data of a sample of control companies (not listed on the SRI Index) for further correlation between compliance with environmental accounting principles and share price fluctuations.

1.7.2 Study demarcation

This study is demarcated to focus on the subject area of environmental accounting and overlapping and thereby narrowing it with stock prices related thereto. Furthermore, this study is firstly demarcated according to study population to include all companies listed on the main board of the Johannesburg Stock exchange on the specific date sampling is to be done ($n = 336$). From these a convenience sample was chosen – choosing those companies with easily accessible data from the McGregor Database. According to Welman *et al.* (2011:69) convenience or haphazard sampling involves selecting haphazardly those cases that are easiest to obtain for the sample. In this case, the sampling was initiated to convenience the easiest access of information. An all-inclusive sample of companies with environmental accounting principle compliance evident through announcements made by the company was used. These announcements included information regarding change in leadership, acquisitions, mergers, financial statements, yearly reports and business statements.

Following this, stratified random sampling was used for the second leg of the research. According to Welman *et al.* (2011:61) stratified random sampling includes sampling from different strata of the population in order to obtain a better representative sample. Thus, strata applicable to this study would be companies from the materials, consumer staples, financials and industrials economic sectors as these sectors were identified as best represented on the SRI Index. From these a sample size of four companies each was drawn by means of the fishbowl random sampling technique. The same stratified random sampling technique was used to acquire a sample of four companies in the relevant strata from the JSE Main Board listed companies that is not listed on the SRI Index.

1.7.3 Data analysis

Statistical analysis will follow data collection by means of the following measures as mentioned by Welman *et al.* (2011:228):

- Count: Comment on the number of companies committing to environmental accounting principles.

- Describe: Description of the different environmental accounting principles that companies tend to commit to as well as what kind of companies tend to commit to these principles.
- Compare: Comparing the fluctuation in share prices of companies that committed to environmental accounting principles to those companies that did not commit to these principles; and
- Categorise: Identify patterns in share price fluctuation correlating with commitment to environmental accounting principles.

1.8 LIMITATIONS OF THE STUDY

Limitations of the study include the fact that it is assumption-based in the first leg of the study and in the sense that stock price fluctuations of listed companies cannot be pinpointed as an effect of a specific encounter with environmental accounting principles and thus is assumed to be related thereto as well as the public divulgence thereof within a limited time frame. The influence of divulgence of confounding factors impacting on the share price could not be prevented. For this reason, the second leg of the study aims to compare companies from specific strata during the same time period so as to eliminate the effect of confounding factors by establishing that the same economic circumstances was relevant to all companies of both the study and control group. A further limitation is that no shareholders' opinions regarding the implementation of environmental accounting principles were accessed, though more appropriately the assessment of the effect thereof was attempted.

1.9 LAY-OUT OF THE STUDY

Chapter	Classification
1.	Introduction to research problem and overview of the study
2.	Literature review
3.	Empirical research aspects, including research methods, sample, statistical methods, and findings.
4.	Recommendations and conclusions of the research.

1.10 SUMMARY

Environmental accounting is becoming a global trend; however, it is not prioritised in South Africa. Proof of positive influence on share prices might create a leniency towards this trend. Such proof will be pursued in this research.

A quantitative design, with descriptive, explanatory, contextual, retrospective and cross-sectional elements is proposed to test a given research hypothesis.

CHAPTER 2

2.1 INTRODUCTION

Burns and Grove (2009:92) define a literature review as an organized written presentation of what has been published on a topic by scholars and includes a presentation of research conducted in the selected field of study. The literature review thus gives scientific background to the study.

In this study, compliance with environmental accounting practices is brought into relation with the share prices of listed companies. This might give an indication on whether there exists a correlation with this compliance and fluctuations of share prices. For this reason, inquiry is made regarding the defining of environmental accounting practices, factors influencing share prices and lastly evidence of influence of compliance with environmental accounting practices on the share price of companies.

2.2 DATA COLLECTION

Literature sources were identified through the utilizing of the search engine EBSCOhost. Databases included in the search were Academic Search Premier, Africa-Wide Information, Business Source Premier, CAB Abstracts, EconLit, Environment Complete, GreenFILE and MasterFILE Premier. Key words used to identify environmental accounting practices were “environmental accounting” as a wider search led to better defining and comprehensive standards and practices thereof. Factors impacting on share price were investigated by using the key word “factors” or “influence*” with “share price” or “stock price”. Lastly the words “environmental accounting” were used as key words in conjunction with “share price” or “stock price” to determine whether any research with regard to the topic of the research was available.

2.3 CONCEPT DISCUSSION

Brink (2006:25) defines concepts as linguistic labels that are assigned to objects or events. Furthermore, defining of concepts allows consistency in the way terms are used (Brink, 2005:25).

2.3.1 Environmental accounting practices

All economies are heavily dependent on the environment as a source of materials and energy, as a sink for waste products and as the physical habitat for human communities (Lange, Hassan & Hamilton, 2003:1). Therefore, the social responsibility laid on companies to conserve the environment is tremendous. Environmental accounting is used as a tool to serve this purpose. The United Nations (2001:3) describes environmental accounting as a combined approach which provides for the transition of data from financial accounting and cost accounting to increase material efficiency, reduce environmental impact and risk and reduce costs of environmental protection. Therefore, any effort made by a company to increase material efficiency, reduce environmental impact and risk or to reduce costs of environmental protection would be seen as compliance with environmental accounting practices.

According to the United Nations (2001:9), environmental accounting practices can be applied in any of the following fields:

- Assessment of annual environmental costs/expenditure.
- Product pricing.
- Budgeting.
- Investment appraisal, calculating investment options.
- Calculating costs, savings and benefits of environmental projects.
- Design and implementation of environmental management systems.
- Environmental performance evaluation, indicators and benchmarking.
- Setting quantified performance targets.
- Cleaner production, pollution prevention, supply chain management and design for environment projects.
- External disclosure of environmental expenditures, investments and liabilities; and
- External environmental or sustainability reporting.

Furthermore, Farouk, Cherian and Jacob (2012:40) provide a model for the justification of environmental accounting as demonstrated below.

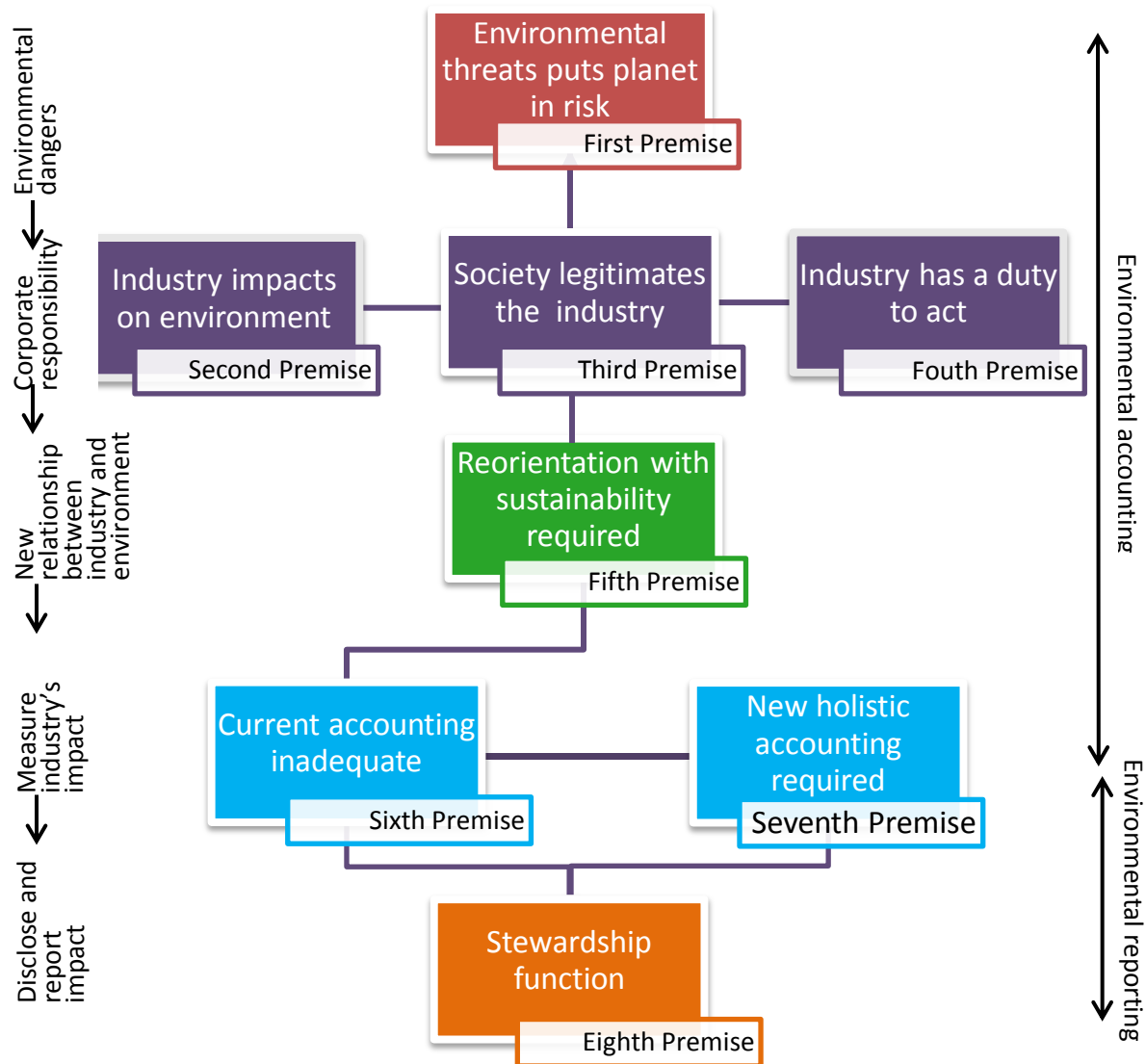


Figure 2.1. A conceptual model for environmental accounting

(Adapted from Farouk *et al.* [2012:40]).

Practices indicating compliance with environmental accounting will now be discussed in more detail under the headings as provided by the conservation leader, European Union priorities for environmental conservation, viz. biodiversity, using resources efficiently, water, waste, air and funding (European Union, 2013:1). These priorities could be correlated with those used by Solomon and Maroun (2012:17) based on the King III report in measuring the level of integrating environmental considerations into reporting. Solomon and Maroun (2012:7) identified the following priorities that were fitted into the wider priorities as provided by the European Union (2013:1) for simplified

coding purposes in this research: Carbon footprint, biodiversity, ecosystems (representing the biodiversity priority); climate change, energy consumption and efficiency (representing the priority of using resources wisely); Air pollution/emissions/GHG emissions and total CO2 emissions (representing the air priority); water consumption/usage and water management (representing the water priority); waste management, recycling and environmental rehabilitation (representing the waste priority); and lastly obligations including decommissioning cost, rehabilitation cost, provision for future rehabilitation and pollution, rehabilitation & closure trust fund (representing the funding priority). Furthermore, the International Integrated Reporting Committee (IIRC, 2011:15) reiterates the importance of including environmental considerations into reporting and provides the following guiding principles thereof: strategic focus; connectivity of information; future orientation; responsiveness and stakeholder inclusiveness; conciseness, reliability and materiality. Including environmental reporting as part of the priorities, a seventh priority, namely diverse practices for environmental conservation, was added.

Any company committing to any of the practices mentioned below will be seen as being compliant with environmental accounting practices.

2.3.1.1 Biodiversity

The European Union (2013:1) suggests strategies to stop the decline of endangered species and habitats. The United Nations Division for Sustainable Development (2001:29) includes preserving of the landscape as a priority, adding re-cultivation and repair of contaminated sites. The United Nations Division for Sustainable Development (2001:24) further explains that comprehensive measures are sometimes required to restore the original landscape, for example the controlled demolition of buildings.

This priority includes funding directed at protecting natural areas, although the European Union (2013:2) excludes nature reserves from these areas, defining natural areas as sites where sustainable human activities can take place without threatening rare and vulnerable species and habitats. The United Nations Division for Sustainable

Development especially adds the deferred removal of overburden in mining and clean-up of contaminated sites to this priority.

2.3.1.2 Using resources efficiently

The Institute of Directors in Southern Africa (2009:15) mentions one of the principles as provided by the King Report on Governance Principles (King III) that responsible leaders do not compromise the natural environment and the livelihood of future generations. The European Union (2013:1) reiterates that in order to avoid a crisis in our use of limited natural resources, fundamental changes are needed to the economy. Not only is every company burdened with the responsibility to ensure sustainability of their enterprises, public education, research and funding of education aimed at better application of resources are included in these practices (European Union, 2013:1). Research and development are seen by the United Nations Division for Sustainable Development as an important part of this priority.

Practical application examples of these practices include promoting eco-friendly products and greater use of energy-efficiency labels on consumer appliances like washing machines (European Union, 2013:1).

As a further example of compliance with this priority, Slezak (2013:7) reports that China halved its growth in electricity demand, utilizing more solar and wind energy production. He also mentions a shift away from imported oil in favour of domestic gas (Slezak, 2013:7). With regards to electricity consumption, Jamaludin, Mahmood, Keumala, Ati and Hussein (2013:158) propose that building layout and arrangement should be considered, as utilisation of day lighting and natural ventilation could be optimised by taking into account floor area of rooms, volume, density, enclosure and façade design, including window design, window area and window-to-wall ratio. This could preserve up to 90 per cent of average electricity use (Jamaludin *et al.*, 2013:17)

1.3.1.3 Water

The European Union (2013:1) prioritises the protection of water resources and ecosystems from pollution, climate change and marine litter. Aims in water

conservation should be focussed on providing access to good quality water in sufficient quantities, ensuring that water bodies meet minimum standards of cleanliness and preserving vulnerable aquatic environments (European Union, 2013:2).

The United Nations Division for Sustainable Development (2001:20) proposes building of sewage treatment plants as a direct expense connected to environmental conservation practices. Also, costs incurred due to remediation after accidental spills such as groundwater contamination by means of working with solvent-containing substances or surface water contamination by means of spills or transport damage is also seen as compliance with environmental accounting practices (United Nations Division for Sustainable Development, 2001:20). Furthermore, Agana, Reeve and Orbell (2013:445) suggest exploration of water reuse opportunities in compliance with environmental conservation practices.

1.3.1.4 Air

A number of pollutants are targeted in air-pollution diminishing efforts, namely sulphur dioxide, nitrogen dioxide, oxides of nitrogen, particulate matter and lead (European Union, 2013:2). As fees are introduced in certain countries on life-cycle emissions of sulphur dioxide, nitrogen oxides, particulate matter and greenhouse gases, preliminary compliance with such fines could also be seen as compliance with environmental accounting practices.

Practically, the European Union (2013:3) changes in electricity production, fuel type, and emissions controls could be implemented for a company wishing for a greener future. The United Nations Division for Sustainable Development (2001:20) furthermore includes acquisition of air pollution filters as an expense directly connected to environmental accounting compliance.

Provisions for clean-up costs or remediation after air emissions such as sudden release due to a breakdown of pollution treatment equipment also prove compliance with environmental accounting practices (United Nations Division for Sustainable Development, 2001:23). Furthermore, Telle (2013:24) reports travel by car and bus to produce high energy emission intensities. Thus, companies that are dedicated to

reducing travel would be seen as their being committed to environmental accounting practices.

1.3.1.5 Waste

Brown, Henze and Milford (2013:3065) suggest that saving money on waste disposal overheads is an important aspect of environmental accounting. The European Union (2013:2) agrees that reducing waste generated should be the first priority, following through to simplified disposal efforts. Therefore, new waste-prevention initiatives, better use of resources and a shift to more sustainable consumption are proposed (European Union, 2013:2). Acquiring new refuse compactors and collection containers for waste could be an indicator of commitment to better manage waste in a company (United Nations Division for Sustainable Development, 2001:20). Once the relevant environmental investments and equipment have been acquired, the annual costs incurred for related operating materials and equipment, maintenance and inspection can prove continued compliance with environmental accounting practices. Furthermore, costs incurred by employing adequate personnel for waste management projects are added to this commitment (United Nations Division for Sustainable Development, 2001:20).

If waste cannot be prevented, materials should be recovered, preferably by recycling. For this reason the European Union (2013:3) calls for improved manufacturing methods and implores consumers to demand greener and recycled products with less packaging. The United Nations Division for Sustainable Development (2001:29) agrees that provisions for recycling as well as re-cultivation and clean-up of contaminated land are included in environmental accounting practices.

1.3.1.6 Funding for a greener future

Any funding aimed at environmental conservation research is seen as commitment to environmental accounting. The United Nations Division for Sustainable Development (2001:25) denotes the term eco-sponsoring to funding of environmental conservation affairs. Related to this are external contracts and internal staff hours for environmentally related research and development projects. This could also include

research on newer technology that consumes less energy and has more production capacity, as it could for instance also be less noisy, requiring less water and have fewer waste products (United Nations Division for Sustainable Development, 2001:26).

1.3.1.7 Diverse practices for environmental conservation

The United Nations Division for Sustainable Development (2001:19) adds protection of soil to the list of practices for environmental conservation. Ienciu, Popa, Muller and Bonaci (2013:53) include the reduction of the use of pesticides to this practice. They furthermore propose that companies should support measures to change on-farm practices through awareness-raising about the adverse effects of pesticides and the introduction of non-chemical alternatives to manage pest problems (Ienciu *et al.*, 2013:53).

Noise and vibration abatement is added to the list by the United Nations Division for Sustainable Development (2001:19).

Protection against radiation is added by the United Nations Division for Sustainable Development (2001:19). Clean-up or remediation after accidental radioactive emissions also prove compliance with environmental accounting practices (United Nations Division for Sustainable Development, 2001:23).

External disclosure of environmental expenditures also reveals commitment to environmental concerns (United Nations Division for Sustainable Development, 2001:29). Roper (2013:26) agrees that increasing transparency regarding environmental aspects and the impact of a company on the environment is consistent with environmental conservation compliance. She also suggests the instatement of environmental management monitors to increase the transparency level of environmental performance within a company. Related to this, Praneetvatakul, Schreinemachers, Pananurak and Tipraqsa (2013:103) reported self-audits on environmental violations as imperative for companies wishing to comply with environmental conservation. Gotthelf and Richotte (2013:64) agree with environmental audits as practice to enhance compliance with conservation practices.

External services required and bought in for the sake of environmental management is another diverse practice of environmental accounting according to the United Nations Division for Sustainable Development (2001:24). These external services could include environment-related consultants, trainers, inspectors, auditors and communication assistants (United Nations Division for Sustainable Development, 2001:24). Related to this are costs incurred for printing and other communications of environmental conservational practices.

2.3.2 Factors impacting on share price

According to the London Stock Exchange (2013:1) it is the expectation of future profitability of a company that causes stock price movements. The London Stock Exchange (2013:4) agrees that earnings drive share prices over the long-term. Investors always consider whether a company as a potential investment has a history of making money. The Stock Market College (2009:1) further explains that if investors believe that the price of the share is less compared to the earning abilities of the company, then they will try to invest more on these companies.

For this reason, all factors that are related to affecting profits should be considered in determining factors of share price fluctuations (London Stock Exchange, 2013:4). Jelsoft Enterprises (2013:1) divides economic factors affecting share price into two main pillars, viz. macro-economic factors, which have a relationship to the overall economy, and micro-economic factors which have a relationship to the economy of the company. According to Jelsoft Enterprises (2013:1) macro-economic factors include the impact of interest rate and the effect of currency, while micro-economic factors include high corporate profits, re-purchasing of shares and rumours of news of the company. Thus economic factors could be divided as external (macro-economic) and internal (micro-economic) factors, as will be discussed below. Furthermore, Glassman (2013:20) confirms that share prices can be affected by a wide variety of issues, though the two principal factors are the performance of the company and the wider environment. Khan and Zuberi (1999:45) refer to these factors as Internal and External factors which will now be discussed.

2.3.2.1 Internal factors impacting on share price

Khan and Zuberi (1999:45) define internal factors as business factors that are directly related to a company's core business and effects its operations, business prospects, profitability and viability. Glassman (2013:21) confirms that share prices correlate with a company's performance. Internal factors impacting on share price will now follow:

2.3.2.1.1 Products

Companies that produce innovative products and continue to do so consistently are generally very profitable (Khan & Zuberi, 1999:46). Consequently the share price of these companies is connected to innovations. Khan and Zuberi (1999:46) further explain that product line diversity is an important consideration, as those companies with widely diversified products will be less vulnerable if one or two products fail while one-product companies are more focussed and can easily control a profitable niche.

2.3.2.1.2 Product cycle

Khan and Zuberi (1999:46) explain that companies with strong product cycles, with a number of products slated for release in the near future, can expect increase in revenues with the product's release, with related growth in share price.

2.3.2.1.3 Competition

New competition can cause severe downward trends in share price (Khan & Zuberi, 1999:46).

2.3.2.1.4 Markets: Presence in growth areas

According to Khan and Zuberi (1999:46) the presence of a company in a growth area will influence its share price. For instance if the company introduces its products to an area with a great growth potential, more products will be sold and thus lead to greater profitability. The Stock Market College (2009:1) agrees that investors generally wish to invest more in companies that belong to sector where the growth opportunities are more, consequently causing the share price of these companies to increase. They

might consider where a specific industry is making more profits and invest in companies aiming to reach these areas.

2.3.2.1.5 Niche/monopoly

If a company can determine a niche area (a unique product) the stock will generally perform well (Khan & Zuberi, 1999:47). Related to this, companies controlling a market through either a monopoly or a large market share can also grow their share prices.

2.3.2.1.6 Institutional presence

Institutional Investors like insurance companies, pension funds, investment firms, non-profit organizations, banks and corporations investing in companies can significantly boost the share price of the company (Khan & Zuberi, 1999:47).

2.3.2.1.7 Management

According to Khan and Zuberi (1999:47) a company cannot thrive without good management. The London Stock Exchange (2013:2) confirms that favourable communications regarding positive guidance from a company's management can cause share prices to rise. Furthermore, the London Stock Exchange (2013:2) explains the importance of the management making an official statement about the likely future prospects of a company in building investors trust. It follows that if the management's guidance has been accurate in the past, information regarding estimates of likely sales or earnings for the next reporting period would be seen as important and trustworthy for shareholders to build expectations on.

Investors take into account important management characteristics, such as integrity, ability to execute the company's plans, willingness to invest for the future, main focus on making correct business decisions rather than focusing on temporary gain, open communications and record of success (Khan & Zuberi, 1999:47).

Linked to this factor are company announcements. According to the London Stock Exchange (2013:2) news regarding a company, whether good or bad, can affect share price. The Stock Market College (2009:3) agrees that announcements made by the

company will influence the share price of the company as with each announcement the investors will try to predict the earnings of the company, changes in management policies and trends. Jelsoft Enterprises (2013:2) also agrees that positive news communicated by management will lead to higher share prices.

On the other hand, the London Stock Exchange (2013:3) lists announcements from management that could have a profoundly negative impact on share price. These include

- Dividends being cut or reduced.
- Negative growth estimates from the management; or
- Management or major shareholders selling the shares they own.

2.3.2.1.8 Mergers, acquisitions and take-overs

Another internal factor affecting the share price is mergers, acquisitions and take-overs, which will influence the share price of both the companies concerning (Stock Market College, 2009:2). According to the Stock Market College (2009:2) the share price of companies that are being taken will commonly increase while the share price of the companies that are making the acquisition or taking over will decrease.

2.3.2.1.9 Dividends

The Stock Market College (2009:2) adds dividends to internal factors that can cause changes in the share price. If the company follows ex-dividends policies (the seller of the share will receive the declared dividend and not the buyer of the share) the price of the share falls by approximately the value of the dividend to be paid.

2.3.2.2 External factors impacting on share price

Khan and Zuberi (1999:48) define external factors to the share price as environmental factors, external to the company's core business that affect its operations, business prospects and profitability. Glassman (2013:21) confirms the influence of the wider environment on share prices. External factors impacting on share price are now discussed:

2.3.2.2.1 Inflation

According to Khan and Zuberi (1999:48) rising inflation is detrimental to share price as it is expected that the earnings growth of companies will be insufficient to offset the higher inflation rate. Thus, the value of future earnings will be diluted by inflation and negatively impact on share price.

2.3.2.2.2 Monetary policy and interest rates

Interest rate trends and Federal Reserve Board policy are among the most important factors that determine the stock market's major trend (Khan & Zuberi, 1999:49). According to Khan and Zuberi (1999:49) a trend, once established (either up or down) typically lasts one to three years. Kahn and Zuberi (1999:49) mention the factors that combine to produce the monetary climate:

- Loan demand.
- Liquidity in the banking system.
- Inflation; and
- Federal Reserve policy decisions.

As the cost of borrowing is reduced by a decline in interest rates, profits are increased and share price tends upward (Khan & Zuberi, 1999:49). Furthermore, Khan and Zuberi (1999:49) explain that during a period of economic growth, demand for loans picks up, causing interest rates to rise, with the consequent influence on share prices. The Stock Market College (2009:3) gives a further example of rate changes by the central bank as government policies that can influence the share price.

Jelsoft Enterprises (2013:1) simplifies the impact of interest rates by stating that interest rate rising leads to a reduction demand for shares, which leads to falling prices and vice versa.

2.3.2.2.3 Bond Market

Khan and Zuberi (1999:54) explain that bond and share prices are influenced by some of the same factors. However, because bonds compete for investment with shares at the same investors, they tend to influence one another's price.

2.3.2.2.4 Economy and the business cycle

Due to the fact that the level of profits that companies will earn is dependent on the economy, strength of the economy will usually translate to an increase in share price (Khan & Zuberi, 1999:54). Glassman (2013:21) explains that investors tend to feel confident if the economic conditions are good and expected to continue that way, with the result that demand for shares tends to rise and prices increase. However, if the economic climate is unstable, investors might worry that a company's profitability will suffer, hence the demand for shares may be reduced and prices may fall (Glassman, 2013:21). This is reiterated by the London Stock Exchange (2013:4) stating that economic statistics released by the relevant authorities can be favourable or detrimental. Adding to the two other economic related factors as mentioned, viz. interest rates and inflation, the London Stock Exchange (2013:4) mentions unemployment figures influencing share price.

It is important to note that even robust companies can experience a decline in share price if the economy is unstable, as the price in this case is not necessarily bound to the company's performance, but rather to the share holders' expectations (Glassman, 2013:22). The London Stock Exchange (2013:3) further explains that certain economic information will hurt some companies' share price more than others. However, the contrary is true as well, a company may reap the benefits of a stable economy even though it might not perform that well. Glassman (2013:21) on the other hand proposes that performance of a company does make a difference in the long run, as well-managed, robust companies will experience their share price to rise.

Related to the economy, is the business cycle, which describes the economy's expansion and contraction (Khan & Zuberi, 1999:54). Siegel (2008:219) explains that the business cycle is a prime determinant of changes in earnings, and thus of share

price. If turning points in the market could be identified, the share price could be accordingly predicted.

2.3.2.2.5 Currency fluctuations

If companies have overseas business, foreign currency fluctuations directly impact on its profitability, and consequently on the share price of the company (Khan & Zuberi, 1999:57). Home currency fluctuations can be both facilitative and detrimental to the share price, as weak home currency will improve the competitive advantage overseas as products could be produced at lower costs, though it might lose the incentive of foreigners to invest in the company due to the national economic picture. Jelsoft Enterprises (2013:1) simplifies the effect of currency on share prices, stating that the devaluation of the currency leads to lower stock prices, though the shares of export value rises because of the low cost of export, which increases profits.

2.3.2.2.6 Political factors and unexpected events

Whenever major political uncertainty exists, the share price is influenced negatively (Khan & Zuberi, 1999:57). This uncertainty arises due to an international or domestic crisis, a president's rising or falling political fortune, upcoming elections, etcetera. Siegel (2008:223) elaborates that certain world events, such as terrorist attacks could also influence share markets due to the political instability that occur. The Stock Market College (2009:2) adds natural disasters to the unexpected circumstances that could alter the price of the shares detrimentally.

2.3.2.2.7 Supply and demand

The London Stock Exchange (2013:1) sees supply and demand as a crucial marker of stock price movement. The London Stock Exchange (2013:1) explains the reason for this as follows: A company has a number of shares available for investors to purchase. If the shares become popular with investors, they buy the shares, which in turn increase the demand. This results in less supply (fewer shares available for purchasing) which causes the price to raise, as fewer stocks available to be purchased leads to the shares left in circulation to be more valuable.

In turn, the London Stock Exchange (2013:1) explains that the rising share price attracts more buyers as it appears to be a well-performing company. However, the opposite is also true; should the demand plummet, the supply would rise and more shares would be available in the market, though it would be seen as less valuable, causing a decline in the price. Glassman (2013:20) confirms that if the supply of products is rising when the demand is increasing much more slowly, the result to be expected is flat and falling share price. Jelsoft Enterprises (2013:2) summarises that high corporate profits lead to higher stock prices due to high demand, and vice versa.

Related to supply and demand is stock buyback. Stock buyback occurs when the company buy back its shares, thereby decreasing the availability of the share, increasing the share price due to the higher demand of scarce shares (Stock Market College, 2009:3). Jelsoft Enterprises (2013:2) agrees that buy-back of shares leads to positive changes in share prices.

2.3.2.2.8 Investor sentiment

The London Stock Exchange (2013:1) adds investor sentiment as an external factor influencing share price fluctuations. Investor sentiment is defined as the collective term that represents the expectations of the majority of shareholders (London Stock Exchange, 2013:1). Wärneryd (2001:21) explains that there may exist herd behaviour among investors, as they do not function independently from one another, but rather tend to act on what they see others do. The Stock Market College (2009:1) agrees that most investors, especially individual investors follow the market movement, thus selling when others are selling and buying when others are buying.

Shareholders buy shares because they expect its price to rise while they sell shares because they expect its price to fall. Thus, the London Stock Exchange (2013:1) explains that investor sentiment can be either positive in the sense that it might cause a rise in share price due to increased demand, or negative in that it might cause the price to fall due to an increase in supply.

Related to this factor is the effect of the month of January: As it is the first month of the year, investors tend to invest in the start of the year, which leads to higher share prices (Jelsoft Enterprises, 2013:2).

2.3.2.2.9 Analysts' earnings estimates

A further external factor to share price fluctuations is mentioned by the London Stock Exchange (2013:3) as analysts' earnings estimates. According to the London Stock Exchange (2013:3) the share price usually plummets if a company fails to meet analysts' earnings estimates. This threat is greater for companies that are followed closely by analysts, while for shares that do not receive much analyst coverage, the earnings forecasts might not have any effect at all (London Stock Exchange, 2013:3). However, the London Stock Exchange (2013:3) explains that those shares that do not receive much analyst coverage are often shares that do not hold much investor trust.

2.3.3 Influence of compliance with environmental accounting standards on share prices of companies

Much controversy exists regarding the profitability of environmental accounting principles. Although many studies have been launched to determine the impacts of conservational commitments on the economic benefits of industries (such as done by Ennew, Akalu and Bancy [2013:55]; Varma and Szewczyk [1990:109] or Lai and Wong [2012:267]), results do not correlate. Some studies such as the one done by Kumar and Shahnag (2013:75) report a positive relationship between environmental reporting and corporate profitability. However, others such as those done by Lai and Wong (2012:267) argue that no economic motivation could be connected to environmental accounting principles.

There is, however, some common ground in research done, namely that compliance with environmental accounting principles is seen as an expectation of the international community and should be seen as companies' responsibility of stewardship. This is confirmed by a study done by Reimer, Thompson and Prokopv (2012:29) concluding that farmers who were motivated by environmental benefits and those who identified responsibilities for others (stewardship) were most likely to adopt conservation practices

while those who were focused on profitability were less likely to adopt these practices. However, there still exists an overwhelming urge in companies to gain profits even by exploitation of the environment, engaging in predatory practices that are highly detrimental to environmental conservation (Dam-de Jong, 2013:155). McConnell and Burger (2011:347) agree that establishing environmental accounting principles might not be compatible with the economic objectives of companies. The challenge remains to find better methods of conservation, while increasing opportunities for the accumulation of capital and profits (Arsel & Büscher, 2012:53).

Most environmental accounting principles are employed in the agriculture, forestry, fishing and hunting industries, as conservation of natural resources in these industries is deemed key to profitability (Wagner, 2011:8). Though no direct correlation between profits and the implementation of environmental accounting practices could be drawn, some studies were done to explore whether a correlation existed between the compliance with these practices and the indirect profit of an increase in share price of the company. However, even here discrepancy exists.

One example of such a study is the one done by Varma and Szewczyk (1990:109) which concluded that significant negative share price effects were reported around the announcement of financial commitment to pollution control. In contradiction with this, Weber, Glasgall and Melcher (1995:158) found share price increases of a company following an announcement of transfer of environmental claims. Another example of booming share prices after environmental accounting principles were committed to, is given by Zhong (2008:2): After the central government prioritized saving energy and reducing pollution policies which affected chemical companies, stock markets in the country experienced increases of more than 200%.

On the hedge is evidence by Halme and Niskanen (2001:200) who found an instantaneous negative market reaction on environmental investments, followed by rapid price recovery. They concluded that environmental investments create goodwill for the investing firms and that care about the environment is well positioned to produce better returns than companies that do not (Halme & Niskanen, 2001:200). Marshall and Heffes (2004:12) argue that some companies experience a growth in share prices while

others experience a decrease after implementing environmentally friendly policies though most environmentally friendly companies experienced an increase in share price. Lammertjan (2011:1015) contributes to the argument that socially responsible investors, investing in companies with compliance with environmental accounting principles for the sake of environmental support, seems to be short-lived.

Although no clear-cut answer on the question of the influence of environmental accounting principles on share prices could be found, the need for more research on this debate was identified.

2.4 CONCLUSION

Seven priorities in environmental accounting principles were identified, including biodiversity, using resources efficiently, water, air, waste, funding for a greener future and diverse practices for environmental conservation. In determining factors that could influence share price, both internal and external factors were described.

Though no definite positive or negative correlation could be derived from available research, the need for more research on the relationship between share price fluctuations and companies' compliance with environmental accounting principles was emphasised.

CHAPTER 3

3.1 INTRODUCTION

According to Brink (2006:54) the empirical phase of the research process includes collecting the data while the interpretive phase includes analysing the data and interpreting the results. In this chapter, the data collection from the chosen sample will be discussed, as well as the results obtained. These results will then be discussed.

3.2 RESEARCH METHODS

3.2.1 Sample

The population for the first leg of the study is an all-inclusive sample of announcements made by main board listed companies as listed on the JSE and available through the McGregor database. The inclusion criteria were any announcement made by the company between 1 June 2008 and 30 June 2013 (5 years) with the presence of any of the following key words within the announcement:

- Environment
- Biodiversity
- Resources
- Water
- Air
- Waste
- Ground
- Green

After 2348 announcements were identified, further narrowing down was done by scanning through the announcements to ensure that these concepts were used within the context of environmental accounting principles. Of these announcements 95% (n = 2220) were discarded due to invalid contexts such as “business environment”, “trading

environment”, “economic environment”, “human resources”, “financial resources”, etc. 5% (n = 128) announcements were included in the study.

For the second leg of the study, the study population included all the Main Board Listed Companies of the JSE. A stratified random sample was drawn to identify thirty two companies in four economic sectors as strata, viz. Materials, consumer staples, financials and industrials. Half of these companies (n = 4companies X 4strata) were drawn from the population of the SRI Index (N = 77) while half of these companies were drawn from the Main Board Listed Companies of the JSE, excluding those that occurs on the SRI Index (N = 336 – 77 = 259). This sample is provided in Table 3.1.

TABLE 3.1: Sample for study and control group companies.

COMPANIES ON THE SRI INDEX	COMPANIES NOT ON THE SRI INDEX
MATERIALS SECTOR	
Anglo American Plc	Assore Ltd
Kumba Iron Ore	First Uranium
BHP Billiton	Metmar Ltd
Palabora Mining Company Ltd	Thabex Ltd
CONSUMER STAPLES SECTOR	
British American Tobacco	Distell Group
Lewis Group	Sovereign Food
Oceana Group Ltd	Awethu Breweries
Woolworths Holdings International	Clover Industries
FINANCIALS SECTOR	
Growthpoint Properties	Acucap Properties
Investec Ltd	Annuity Properties
Sanlam	Barclays Africa
Standard Bank Group	London Financial & Investment
INDUSTRIALS SECTOR	
Grindrod	Ellies Holdings
Imperial Holdings	Howden Africa
NamPak	Sea Kay Holdings
PPC Ltd	Trencor Ltd

3.2.2 Data collection

For the first leg of the study, data collection was done by means of a literature search using the McGregor Database. Key concepts as listed above were used to indicate what aspect of environmental accounting principles was complied with. Furthermore the sampled documents were scanned to identify any confounding factors that could impact on share price. Information regarding share price fluctuations was gathered through the same database and graphs depicting these fluctuations were included, as were the dates of the relevant announcements. The industry of the companies that were included in the study (n = 48 identified from a population of 336 listed companies) was also detected and noted.

Morgan Stanley Capital International (2002:34) provides the global industry classification standard for companies, whereby a company can be classified according to economic sector, industry group and sub-industry. There are ten (10) economic sectors as is provided in table 3.1 with their relevant industry groups. These were used to indicate the economic sector as well as the industry group of each sampled company.

TABLE 3.2: Classification according to economic sector and industry group

Economic sector	Industry group
Energy	Energy equipment and services Oil and gas
Materials	Chemicals Construction materials Containers and packaging Metals and mining Paper and forest products
Industrials	Capital goods Commercial services and supplies Transportation
Consumer discretionary	Automobiles and components

	Consumer durables and apparel Hotels, restaurants and leisure Media and retailing
Consumer staples	Food and drug retailing
	Food, beverages and tobacco Household and personal products
Health care	Health care equipment Pharmaceuticals and biotechnology
Financials	Banks Insurance Real estate
Information technology	Software and services Technology hardware and equipment
Telecommunication services	Telecommunication services
Utilities	Utilities

For the second leg of the study, share price data was collected for sampled companies. This data included the share price of a specific company on 1 June 2012 and again on 1 June 2013 in order to determine the fluctuation during this one year period.

3.3 RESULTS

The results of the first leg of the study are depicted in Table 3.3. It provides the name of companies included in the study, dates of announcements identified with the environmental accounting principles as addressed in the announcements as well as possible confounding factors divulged in the relevant announcement. Furthermore the trend of the share price of that company after the announcement is noted at one month and one year intervals. Lastly a graph of each company's share price fluctuation is provided.

A more detailed report of share price fluctuations as related to these announcements follow in Table 3.4. For the sake of completeness a control group was created from the

same companies' announcements by comparing the share price fluctuations a month and a year prior to the announcement respectively to the fluctuations following a month and a year after the announcement. The average fluctuation during the time periods (one month or one year) as well as the standard deviation and p-values determined through a t-test is reported on. The t-test was used to determine if a correlation exists between the evidence of compliance with environmental accounting principles in an announcement and the share price fluctuation.

Results for the second leg of the study are reported in Table 3.5. Share price fluctuations of the year 1 June 2012 to 1 June 2013 of sixteen sampled companies are reported. Share price fluctuations were correlated to the company being formally compliant to or non-compliant to environmental accounting principles as evidenced by their presence on the SRI Index by applying t-tests on the results within the four relevant strata.

TABLE 3.3: RESULTS DRAWN FROM ANNOUNCEMENTS MADE BY JSE MAIN BOARD LISTED COMPANIES

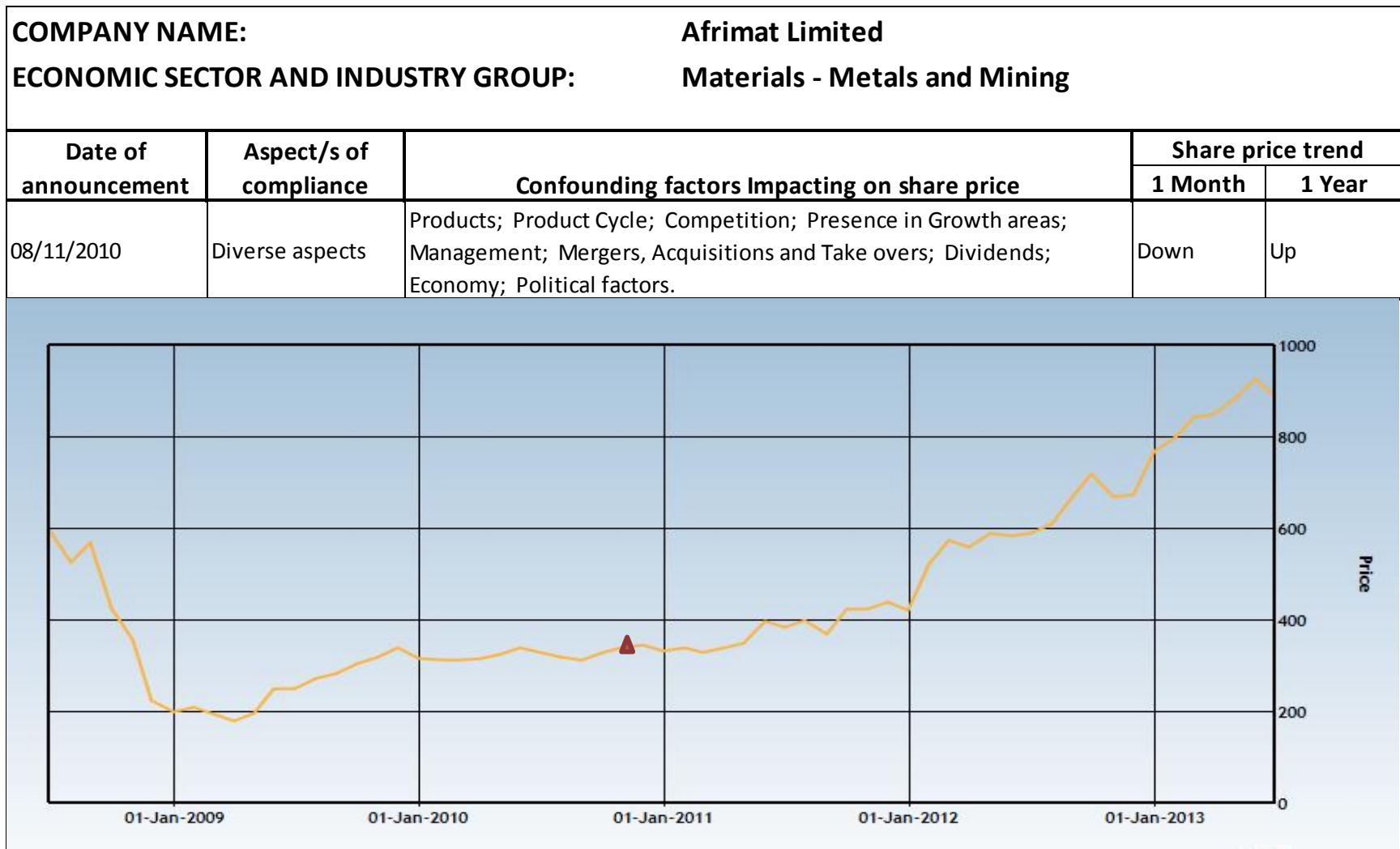
COMPANY NAME:		AECI Limited		
ECONOMIC SECTOR AND INDUSTRY GROUP:		Materials - Chemicals		
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
28/06/2012	Water.	Mergers, Acquisitions and Take overs; Presence in Growth areas; Products; Product Cycle.	Up	Up

The chart displays the share price trend of AECI Limited from January 2009 to January 2013. The Y-axis represents Price (4000 to 12000) and the X-axis represents time (01-Jan-2009 to 01-Jan-2013). The price starts around 6000, dips to 4500 in early 2009, then rises to a peak of 9500 in late 2012, followed by a sharp decline to 7500 in early 2013, and a subsequent recovery to 11000 by January 2013.

Date	Price
01-Jan-2009	6000
01-Jan-2010	6000
01-Jan-2011	8000
01-Jan-2012	8500
01-Jan-2013	11000

COMPANY NAME:		African Rainbow Minerals Limited		
ECONOMIC SECTOR AND INDUSTRY GROUP:		Materials - Metals and Mining		
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
01/09/2008	Funding	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Currency fluctuations; Political factors; Supply and Demand.	Down	Down
31/08/2009	Diverse aspects	Products; Product Cycle; Presence in Growth areas; Management; Dividends; Inflation; Economy; Currency fluctuations; Supply and Demand; Analysts' earnings estimate.	Down	Up
22/02/2010	Diverse aspects	Products; Product Cycle; Presence in Growth areas; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Political factors; Supply and Demand.	Up	Up

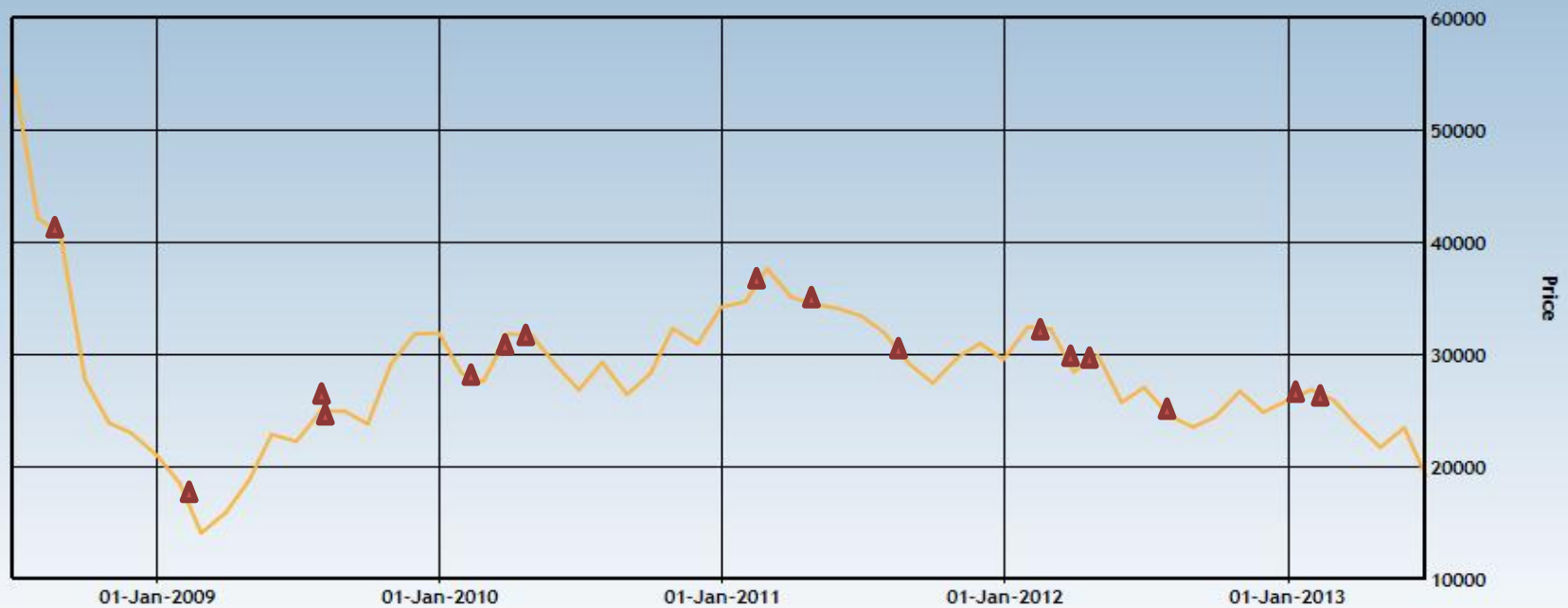
The chart illustrates the share price trend of African Rainbow Minerals Limited from January 2009 to January 2013. The Y-axis represents Price (5000 to 30000) and the X-axis represents time (01-Jan-2009 to 01-Jan-2013). The price starts high (around 28000), drops sharply to around 10000 in early 2009, then fluctuates between 10000 and 20000 until late 2012, where it peaks around 22000, and finally drops to around 15000 by early 2013. Three red triangles mark specific points on the price line.



COMPANY NAME: Anglo American Plc ECONOMIC SECTOR AND INDUSTRY GROUP: Materials - Metals and Mining				
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
31/07/2008	Funding; Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Institutional Investors; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand; Analyst's earnings estimate.	Down	Down
20/02/2009	Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Political factors; Supply and Demand.	Up	Up
31/07/2009	Diverse aspects.	Products; Product Cycle; Mergers, Acquisitions and Take overs; Inflation; Economy; Currency fluctuations; Political factors; Supply and Demand.	Down	Up
31/07/2009	Funding; Diverse aspects.	Products; Product Cycle; Competition; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Political factors; Supply and Demand; Analysts' earnings estimate.	Down	Up
19/02/2010	Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Supply and Demand.	Up	Up
12/03/2010	Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors; Supply and Demand.	Up	Up

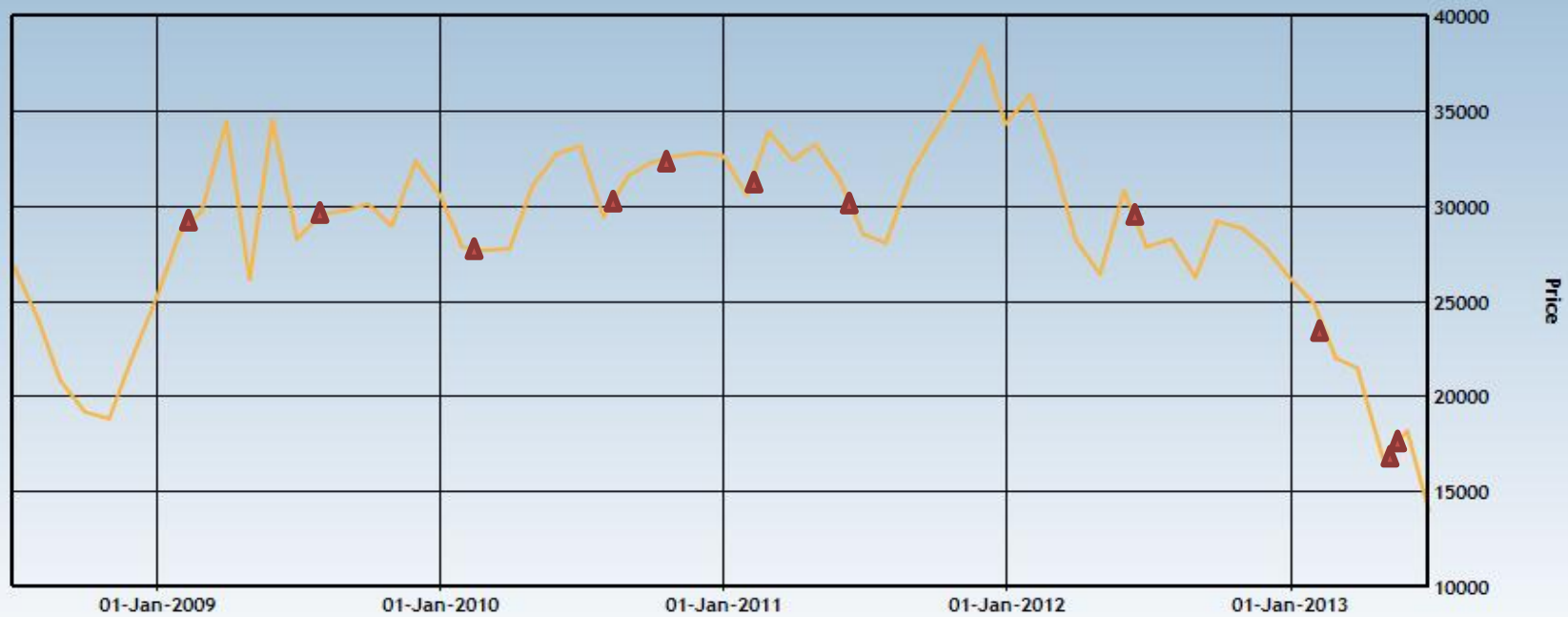
22/04/2010	Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Political factors; Supply and Demand; Analysts' earnings estimate.	Down	Up
18/02/2011	Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors; Supply and Demand.	Down	Down
21/04/2011	Diverse aspects.	Product Cycle; Competition; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand; Analysts' earnings estimate.	Down	Down
29/07/2011	Funding; Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors; Supply and Demand.	Down	Down
17/02/2012	Funding.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Political factors; Supply and Demand; Analysts' earnings estimate.	Down	Down
20/03/2012	Water; Air; Waste; Funding.	Products; Product Cycle; Competition; Presence in Growth areas; Institutional Investors; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Political factors; Supply and Demand.	Down	Down
20/04/2012	Using Resources efficiently; Funding; Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand; Analysts' earnings estimate.	Down	Down
27/07/2012	Water; Funding; Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Institutional Investors; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors; Supply and Demand.	Down	Down

04/01/2013	Diverse aspects.	Product Cycle; Presence in Growth areas; Mergers, Acquisitions and Take overs.	Down	Unknown
15/02/2013	Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Institutional Investors; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors; Supply and Demand; Analysts' earnings estimate.	Down	Unknown



COMPANY NAME: AngloGold Ashanti Limited ECONOMIC SECTOR AND INDUSTRY GROUP: Materials - Metals and Mining				
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
09/02/2009	Funding; Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Currency fluctuations; Political factors; Supply and Demand.	Up	Down
31/07/2009	Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Currency fluctuations; Political factors; Supply and Demand.	Up	Up
17/02/2010	Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Political factors; Supply and Demand.	Up	Up
12/08/2010	Water; Waste; Funding.	Products; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Inflation; Interest Rates; Economy; Currency fluctuations; Political factors; Supply and Demand.	Up	Up
11/11/2010	Water; Waste; Funding; Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Currency fluctuations; Supply and Demand.	Up	Up
17/02/2011	Water; Funding; Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Up	Up
11/05/2011	Funding; Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Currency fluctuations; Political factors; Supply and Demand.	Down	Down
10/05/2012	Water; Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors; Analysts' earnings estimate.	Down	Down

20/02/2013	Waste; Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Down	Unknown
13/05/2013	Funding; Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Currency fluctuations; Political factors.	Up	Unknown
21/05/2013	Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Political factors.	Down	Unknown

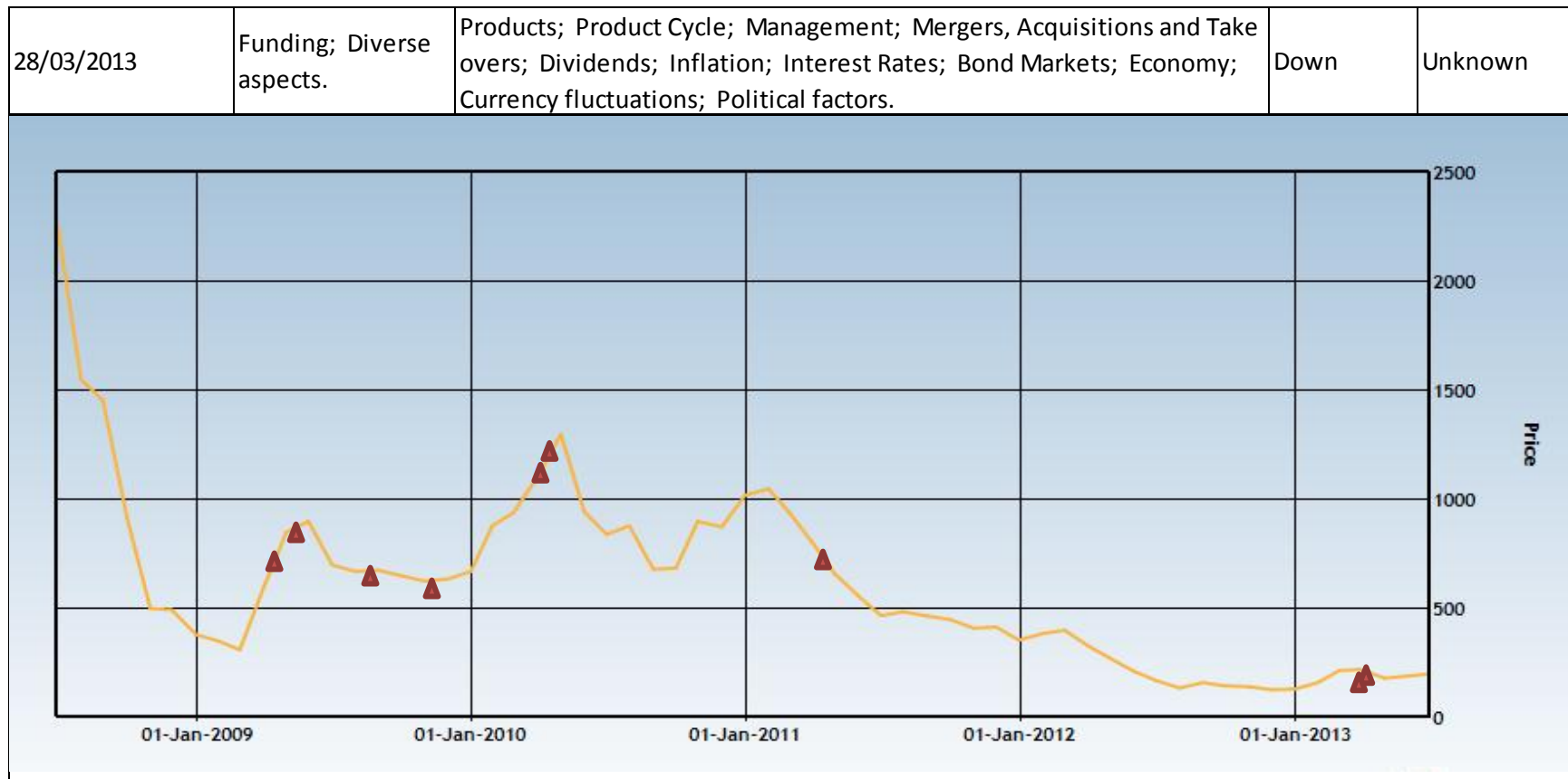


COMPANY NAME:		Arcelormittal South Africa Limited		
ECONOMIC SECTOR AND INDUSTRY GROUP:		Materials - Metals and Mining		
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
30/07/2008	Air.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Down
05/11/2008	Water; Air.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Up	Up
11/02/2009	Air; Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Up
29/04/2009	Air; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Up	Up
29/07/2009	Air; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Up	Down
28/10/2009	Air.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Down
10/02/2010	Air; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Up	Down
29/04/2010	Air.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Down

28/07/2010	Water; Air; Waste; Funding.	Products; Product Cycle; Presence in Growth areas; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Down
08/02/2011	Water; Waste; Funding.	Products; Product Cycle; Presence in Growth areas; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Up	Down
11/05/2011	Water; Funding.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Down
27/07/2011	Water; Funding.	Products; Product Cycle; Presence in Growth areas; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Down
07/02/2012	Water; Air; Funding.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Down
31/01/2012	Water; Funding; Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Dividends; Inflation; Economy; Supply and Demand.	Down	Down
06/02/2013	Water; Air; Funding.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Down	Unknown
10/05/2013	Water; Air; Funding.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Economy; Supply and Demand.	Up	Unknown



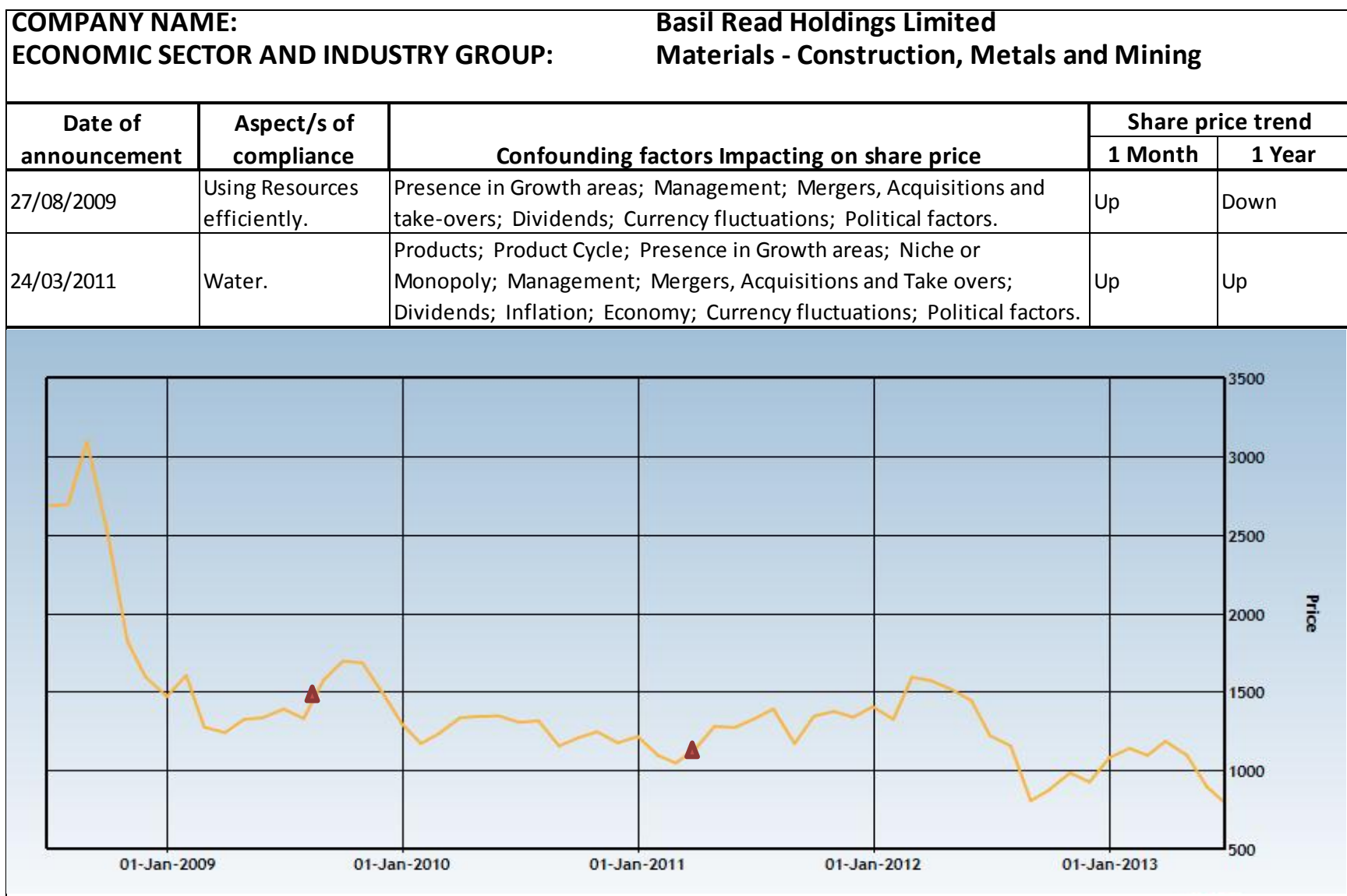
COMPANY NAME:		Atlatsa Resources Corporation		
ECONOMIC SECTOR AND INDUSTRY GROUP:		Materials - Metals and Mining		
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
03/04/2009	Air; Funding; Diverse aspects.	Products; Product Cycle; Competition; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Up	Up
18/05/2009	Funding; Diverse aspects.	Products; Product Cycle; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Down	Up
17/08/2009	Air; Funding; Diverse aspects.	Products; Product Cycle; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Down	Up
16/11/2009	Air; Funding; Diverse aspects.	Products; Product Cycle; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Up	Up
31/03/2010	Air; Funding; Diverse aspects.	Products; Product Cycle; Competition; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Up	Down
06/04/2010	Air; Funding; Diverse aspects.	Products; Product Cycle; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Down	Down
24/03/2011	Air; Funding; Diverse aspects.	Products; Product Cycle; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations.	Down	Down
30/03/2013	Air; Funding; Diverse aspects.	Products; Product Cycle; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Political factors.	Down	Unknown



COMPANY NAME:	Barloworld Limited
ECONOMIC SECTOR AND INDUSTRY GROUP:	Consumer Discretionary - Automobiles and Components

Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
20/05/2013	Waste; Diverse aspects.	Products; Competition; Presence in Growth areas; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and demand.	Down	Unknown

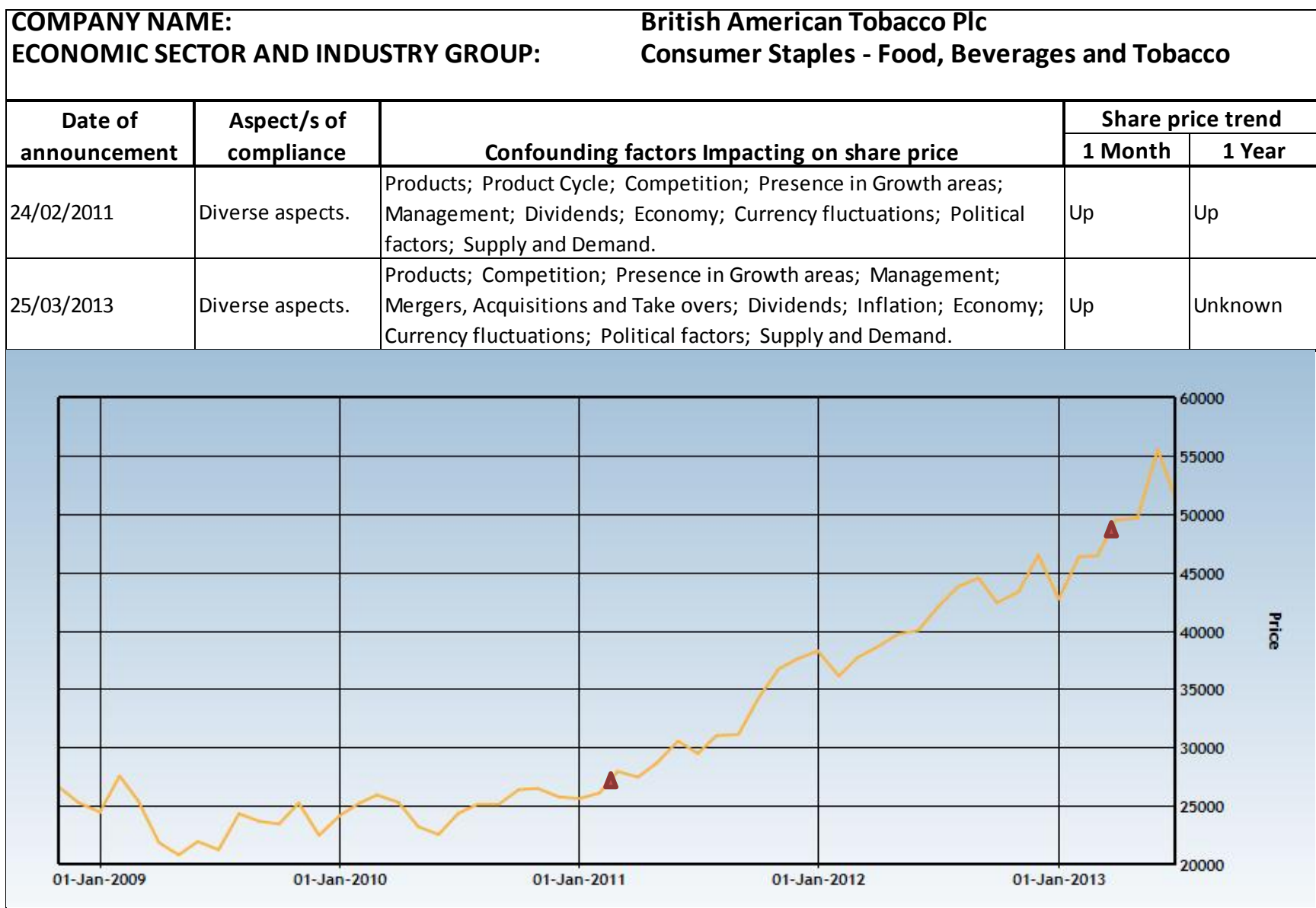


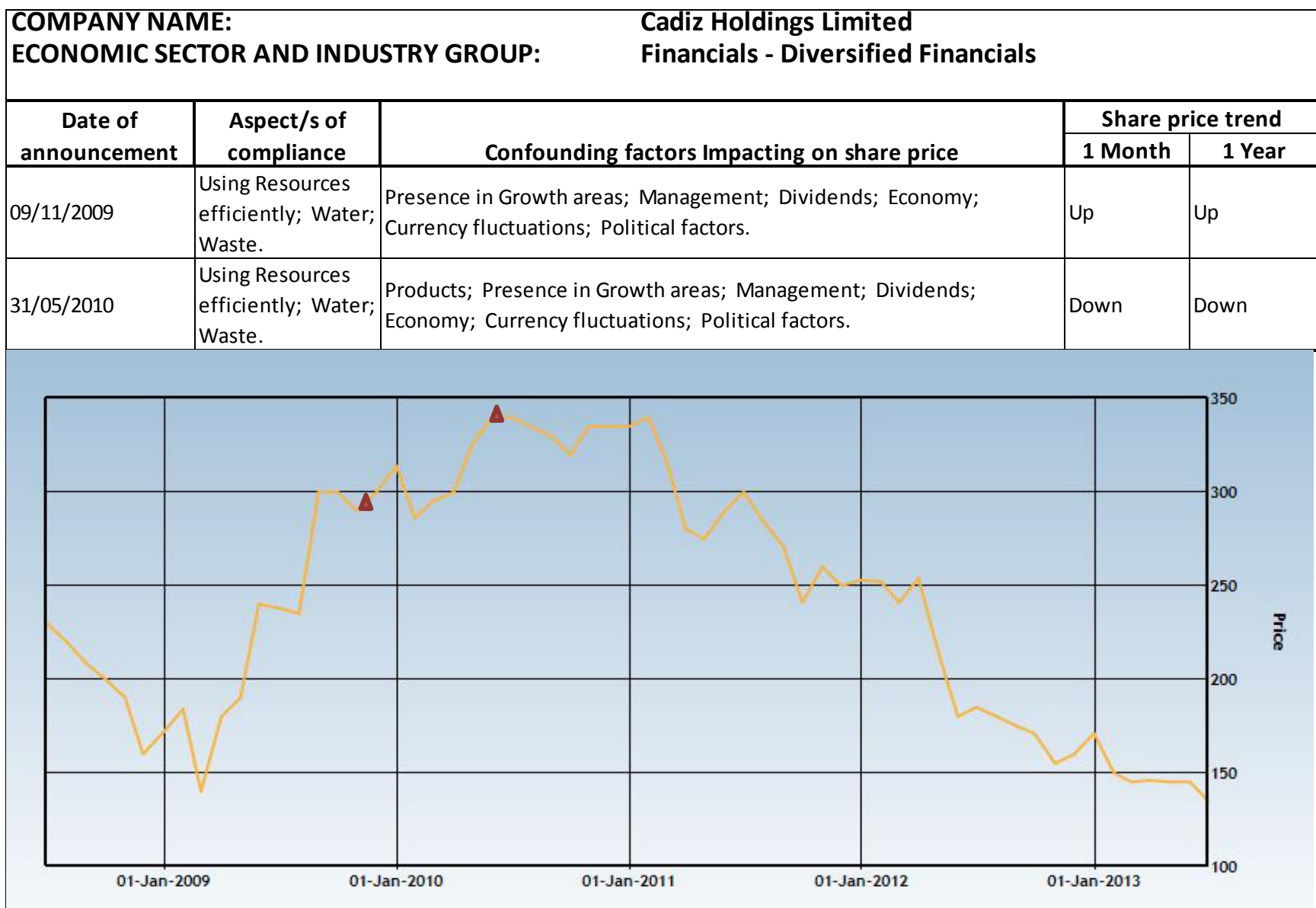


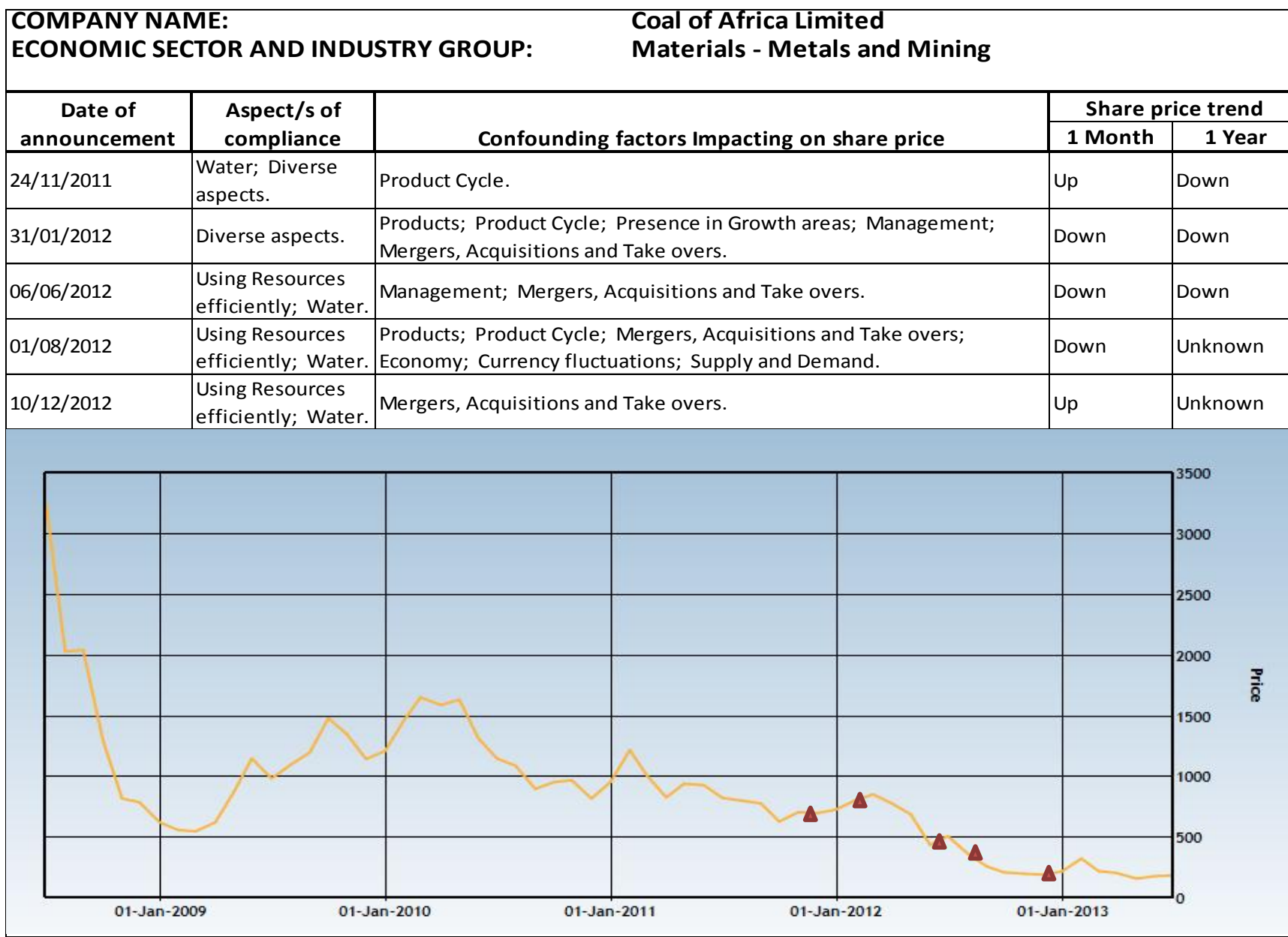
COMPANY NAME:		BHP Billiton Plc		
ECONOMIC SECTOR AND INDUSTRY GROUP:		Materials - Metals and Mining		
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
25/01/2012	Diverse aspects.	Products; Competition; Presence in Growth areas; Management; Dividends; Interest Rates; Economy; Currency fluctuations; Political factors; Supply and Demand.	Up	Up
29/11/2012	Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Dividends; Economy; Currency fluctuations; Political factors; Supply and Demand.	Up	Unknown

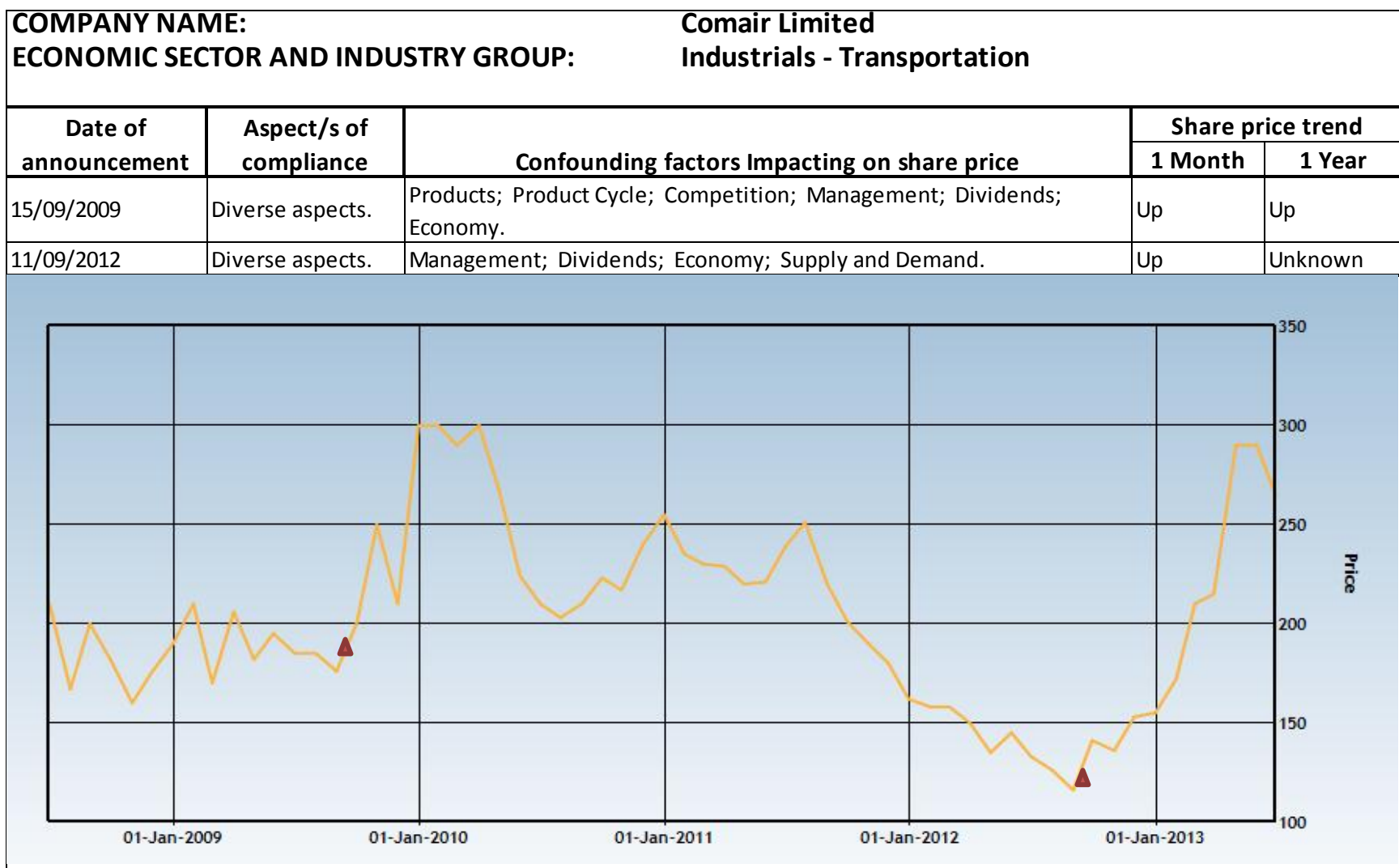
The chart displays the share price of BHP Billiton Plc over a four-year period. The y-axis represents the price in Australian dollars, ranging from 15,000 to 35,000. The x-axis shows dates from 01-Jan-2009 to 01-Jan-2013. The price shows significant volatility, with a major low point in early 2009 followed by a recovery and subsequent fluctuations. A notable upward trend is visible in late 2012 and early 2013.

Date	Price (AUD)
01-Jan-2009	30,000
01-Jul-2009	16,000
01-Jan-2010	22,000
01-Jul-2010	25,000
01-Jan-2011	28,000
01-Jul-2011	26,000
01-Jan-2012	24,000
01-Jul-2012	26,000
01-Jan-2013	25,000





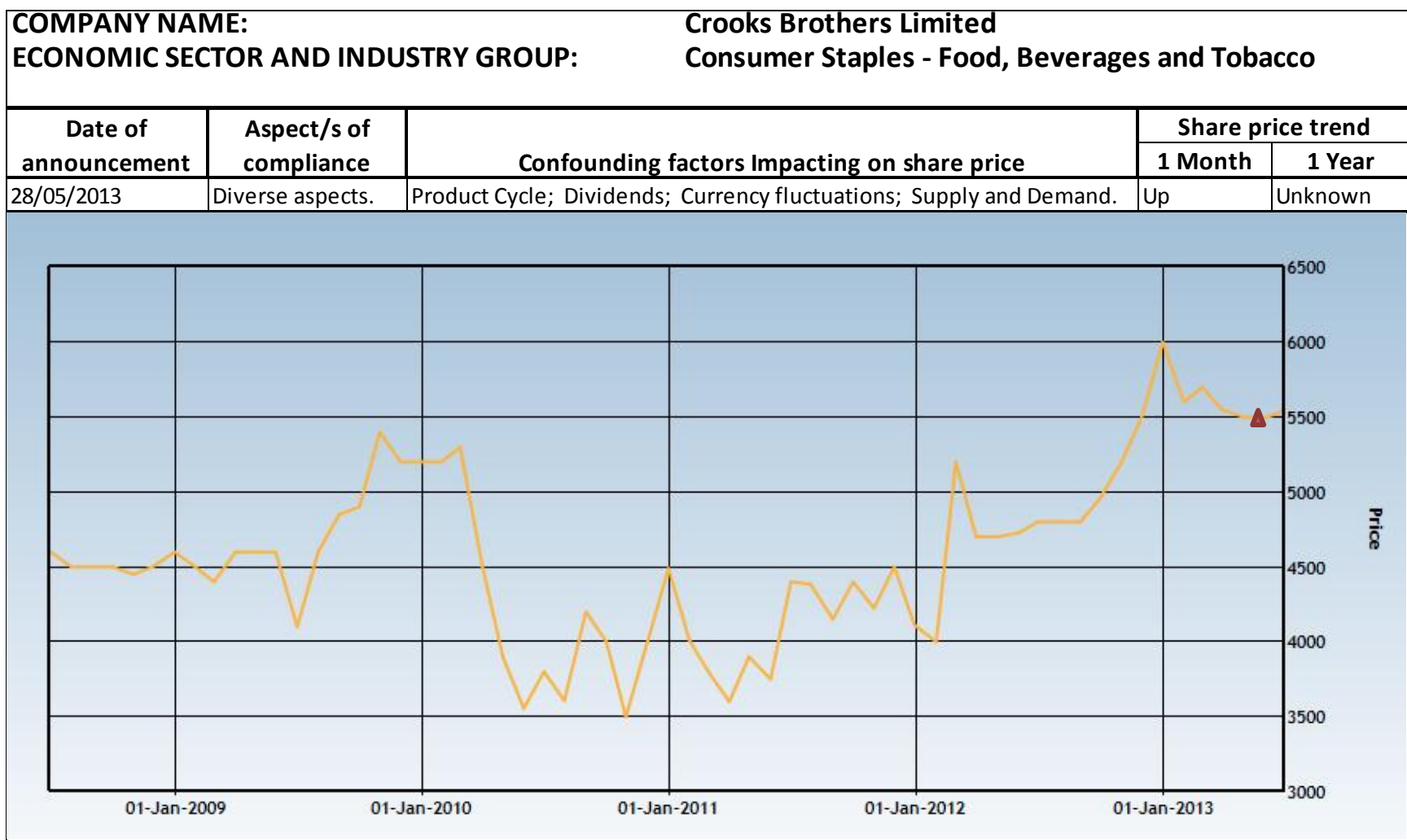


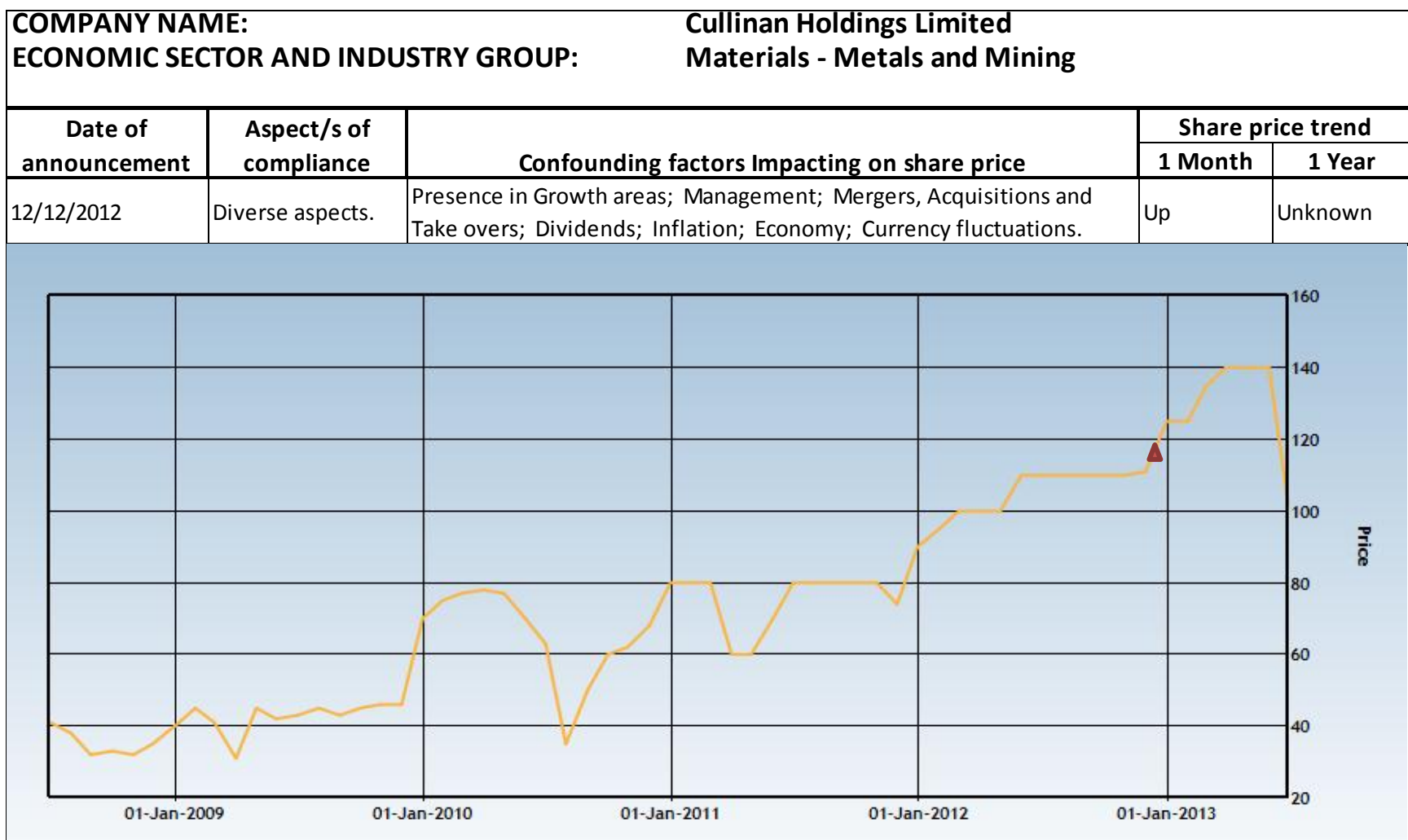


COMPANY NAME:	Consolidated Infrastructure Grp Limited
ECONOMIC SECTOR AND INDUSTRY GROUP:	Materials - Construction

Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
28/10/2010	Waste; Diverse aspects.	Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Economy; Currency fluctuations.	Up	Up
03/12/2012	Funding.	Products; Competition; Management; Mergers, Acquisitions and Take overs; Dividends; Interest Rates; Currency fluctuations; Supply and Demand.	Up	Unknown

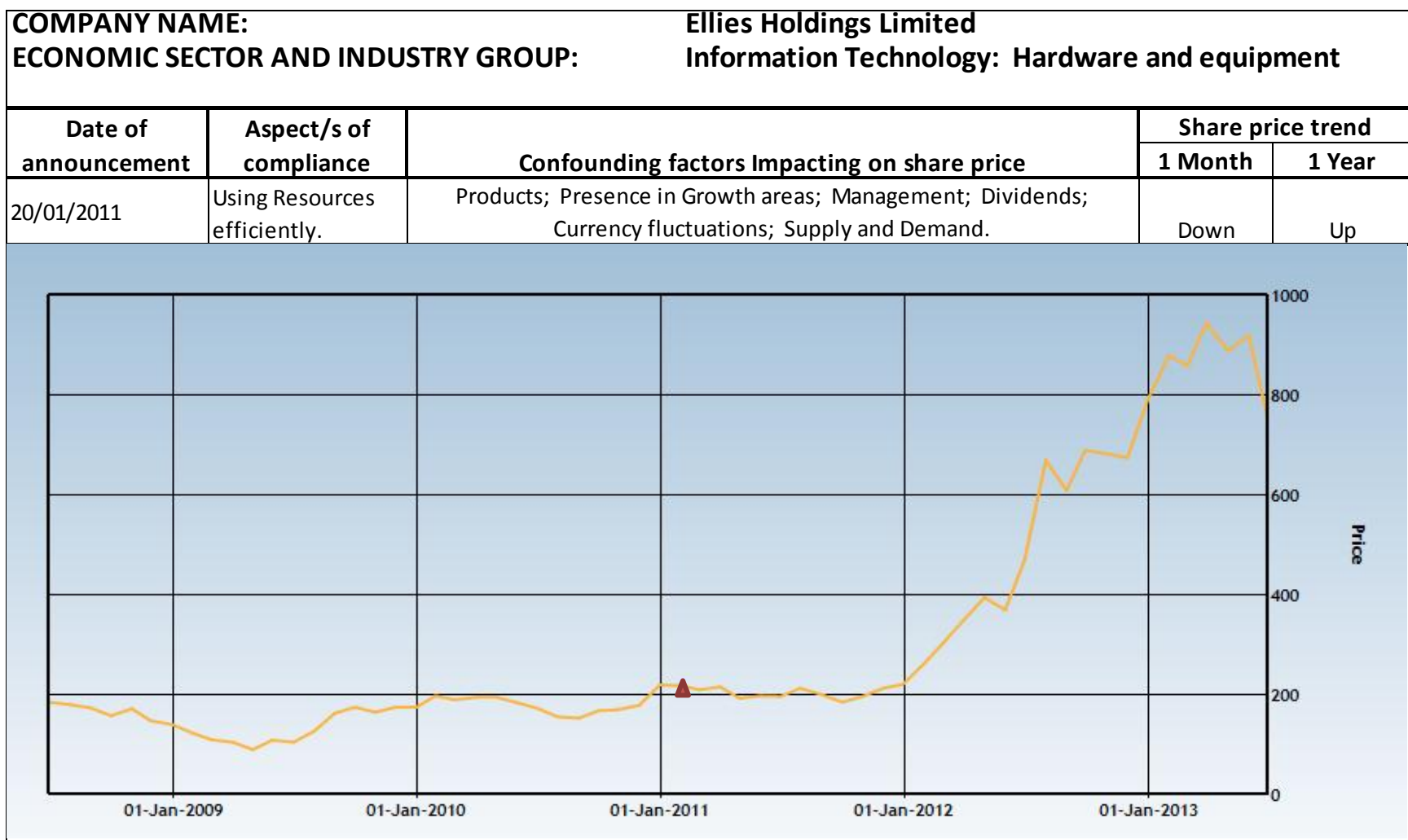


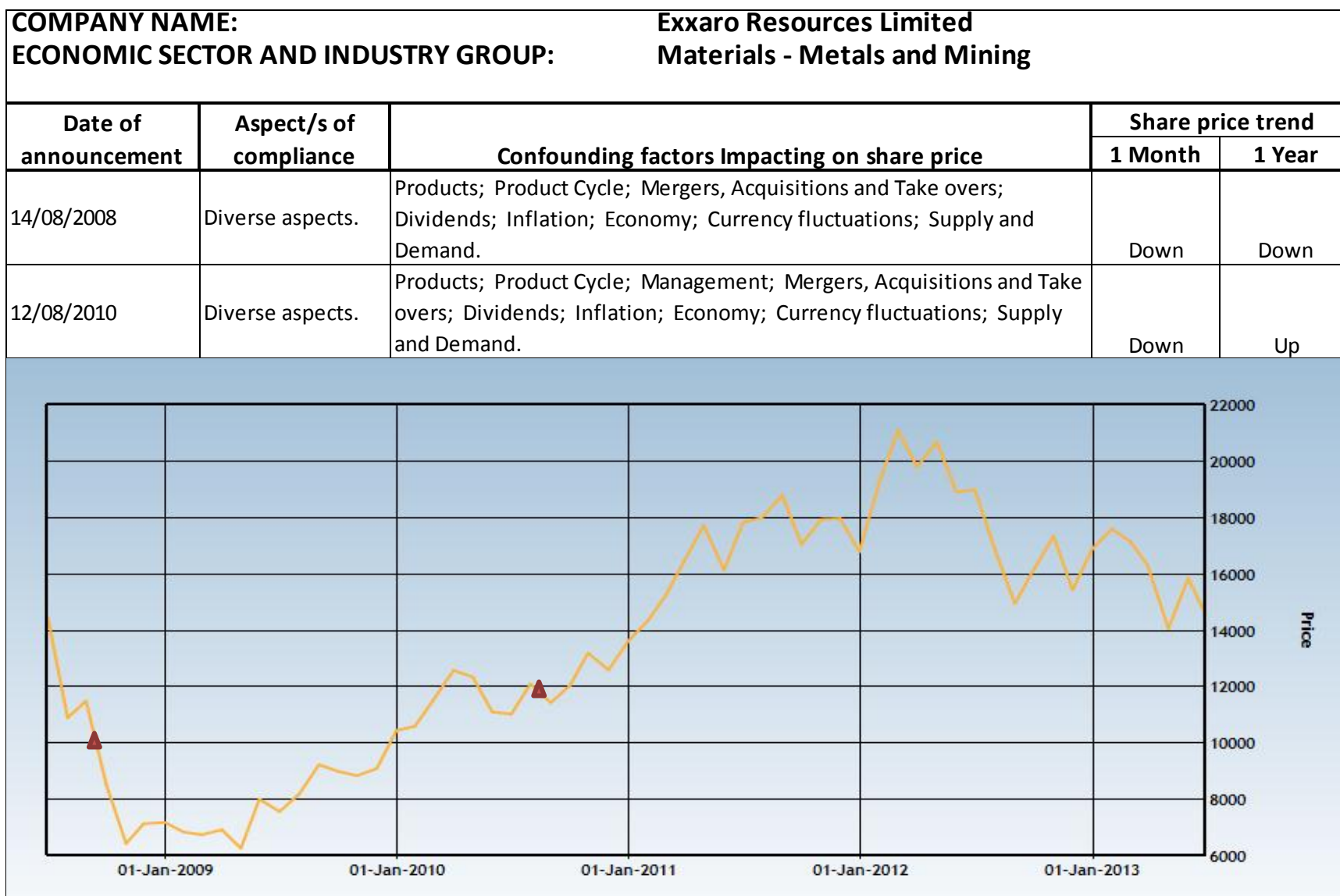


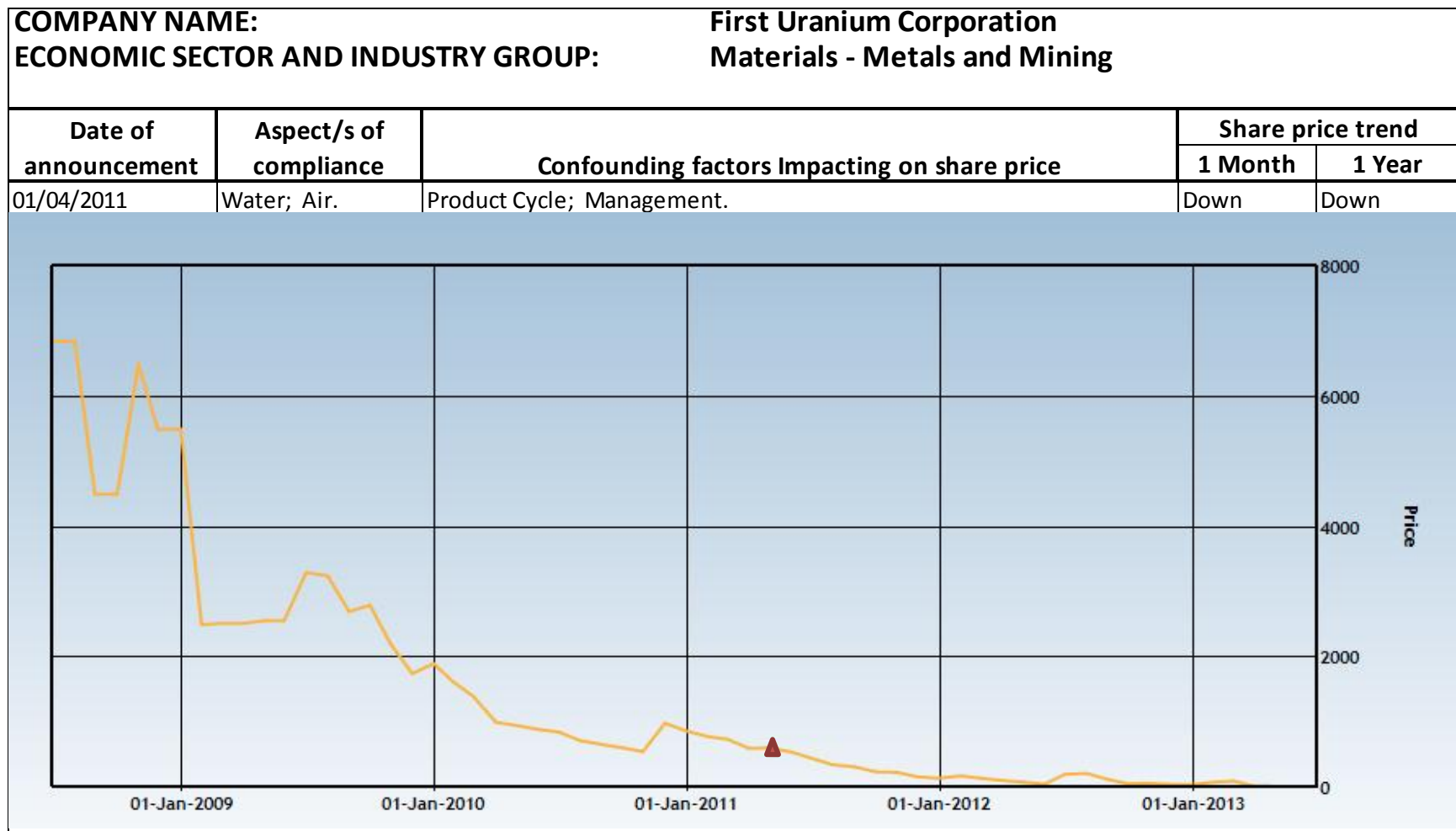


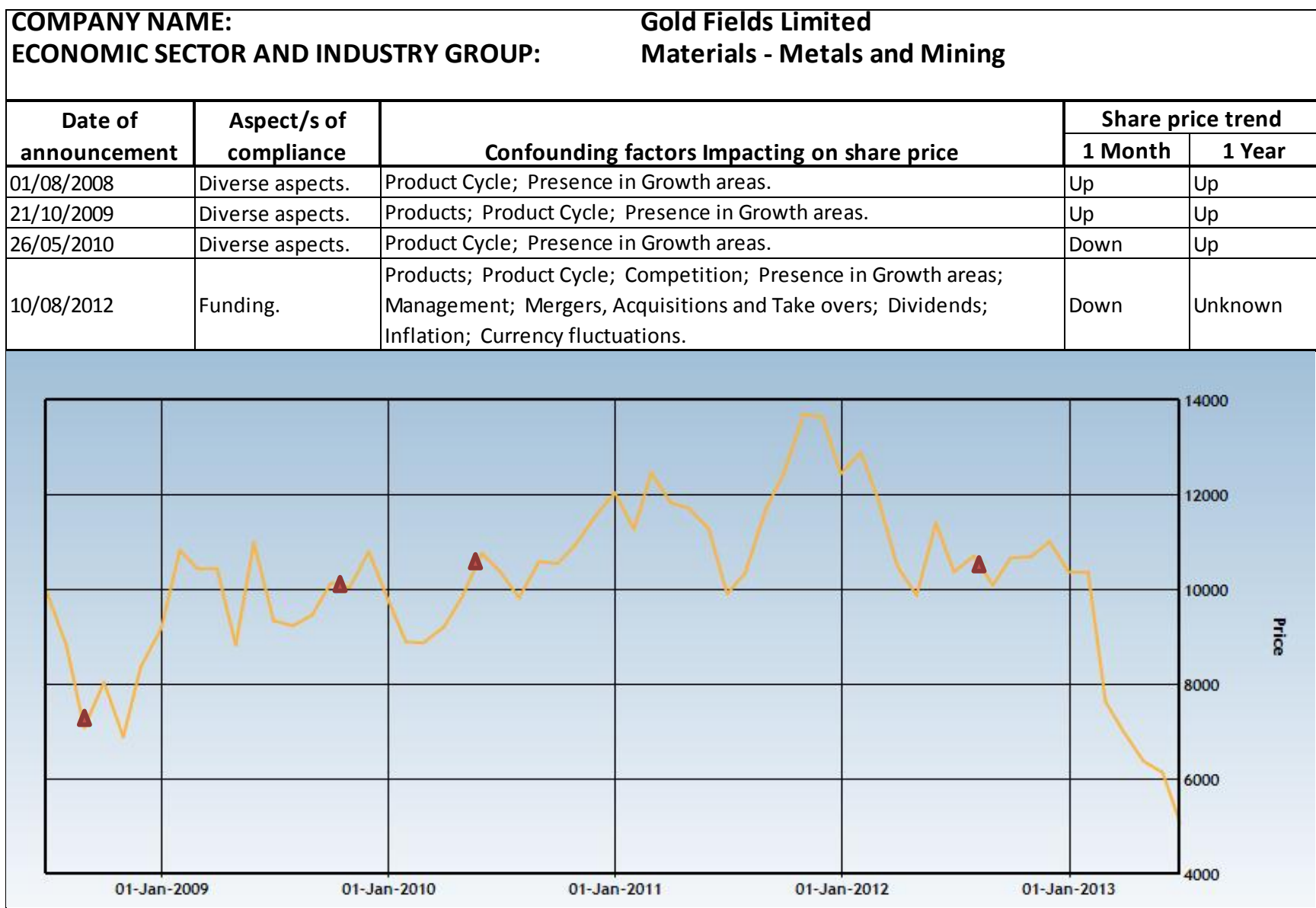
COMPANY NAME: Eastern Platinum Limited ECONOMIC SECTOR AND INDUSTRY GROUP: Materials - Metals and Mining				
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
31/03/2009	Water; Diverse aspects.	Products; Product Cycle; Competition; Management; Mergers, Acquisitions and Take overs; Inflation; Interest Rates; Economy; Currency fluctuations; Political factors.	Up	Up
13/05/2009	Water; Diverse aspects.	Products; Product Cycle; Competition; Management; Mergers, Acquisitions and Take overs; Inflation; Interest Rates; Economy; Currency fluctuations.	Up	Up
13/08/2009	Water; Diverse aspects.	Products; Product Cycle; Competition; Management; Mergers, Acquisitions and Take overs; Inflation; Interest Rates; Economy; Currency fluctuations.	Up	Up
12/11/2009	Water; Diverse aspects.	Product Cycle; Competition; Management; Mergers, Acquisitions and Take overs; Inflation; Interest Rates; Economy; Currency fluctuations; Political factors.	Up	Up

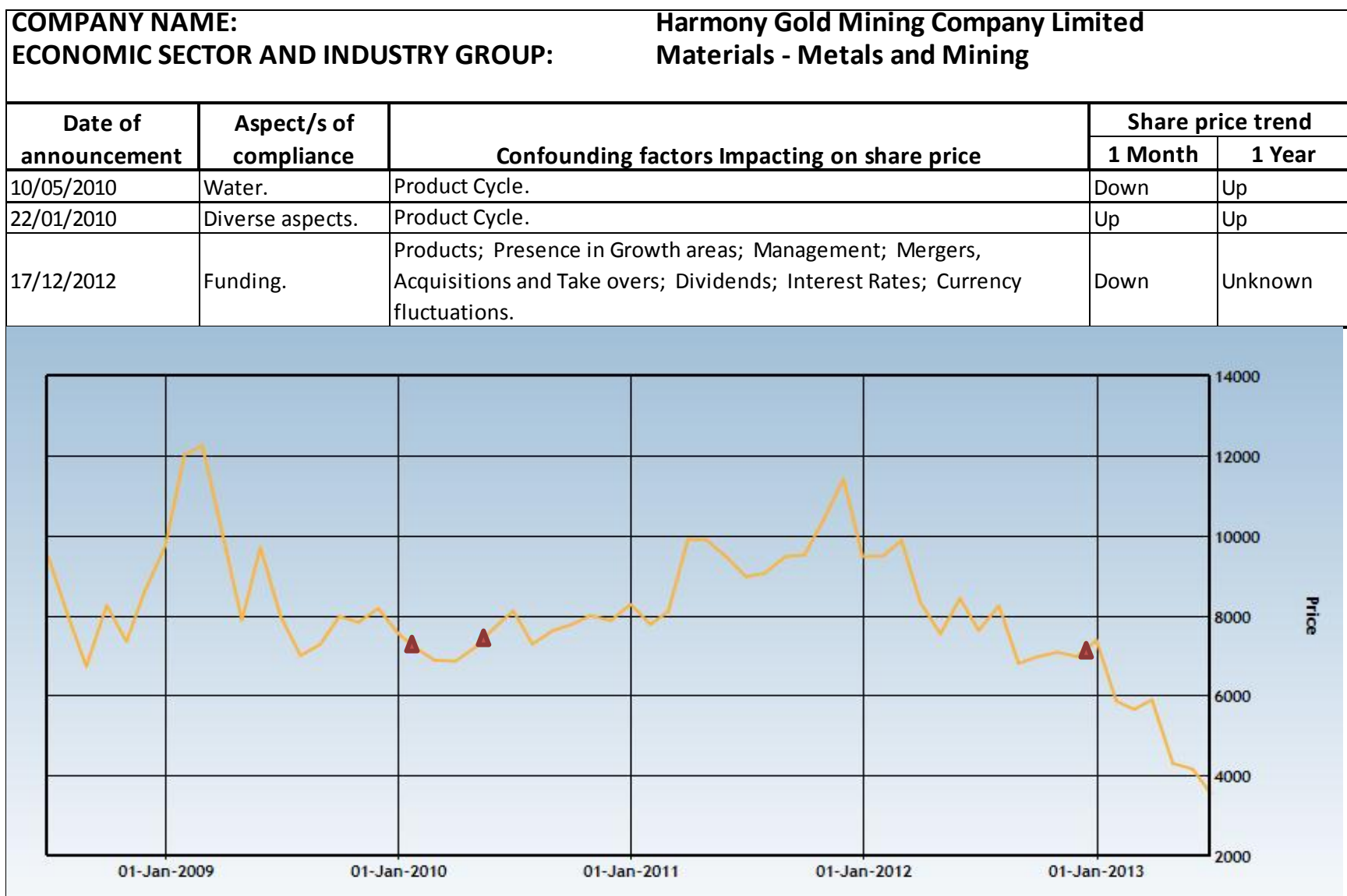
The graph illustrates the share price trend of Eastern Platinum Limited over a four-year period. The price begins at a high of approximately 2000 in early 2009, followed by a sharp decline to around 200 by early 2010. From 2010 to 2011, the price shows significant volatility, peaking at about 1200 in late 2010 before declining to around 500 by early 2012. The price continues to fall, reaching near zero by early 2013. Four red triangles are plotted on the line, corresponding to the dates listed in the table above: 31/03/2009, 13/05/2009, 13/08/2009, and 12/11/2009. At these points, the price is approximately 1000, 500, 500, and 600 respectively.

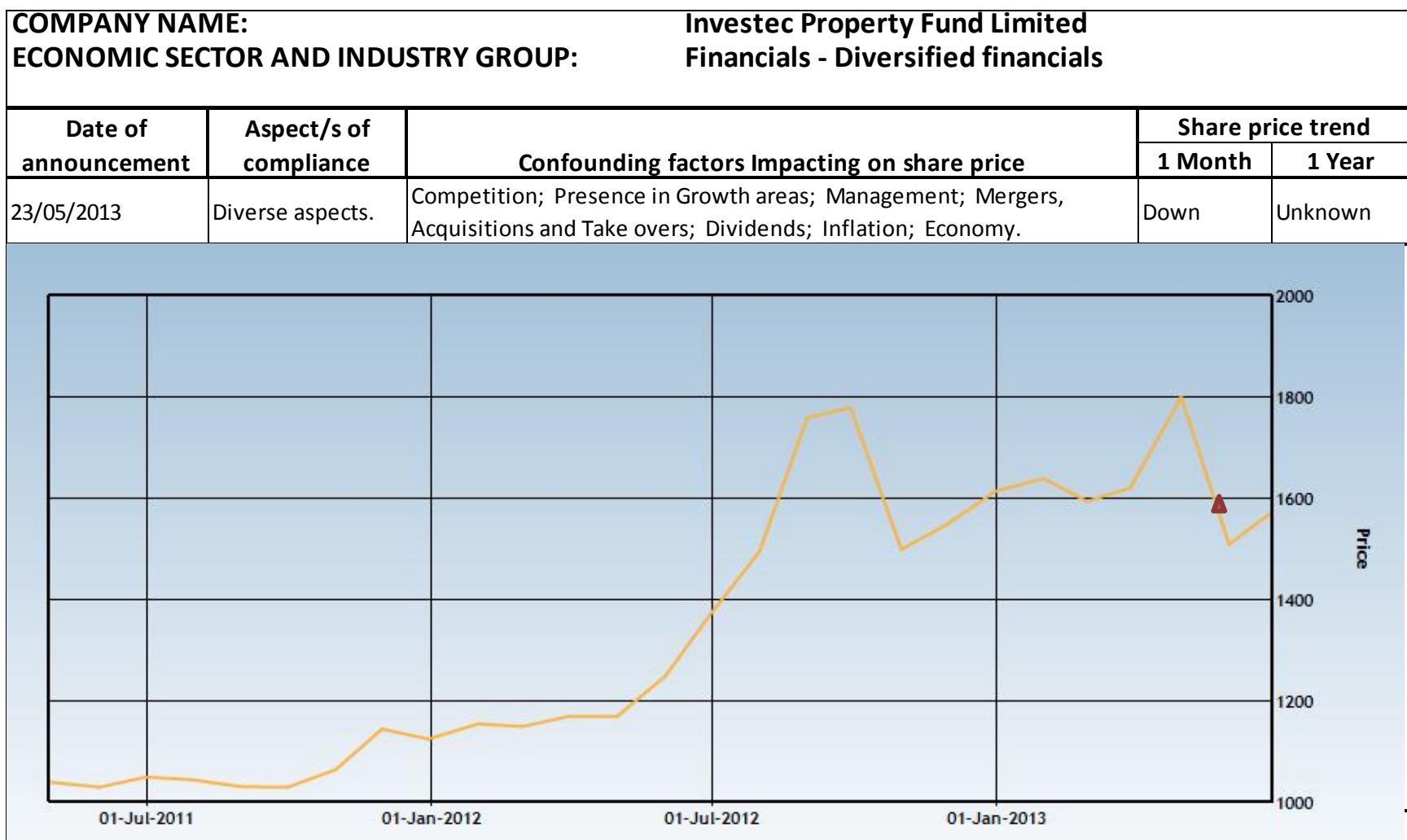


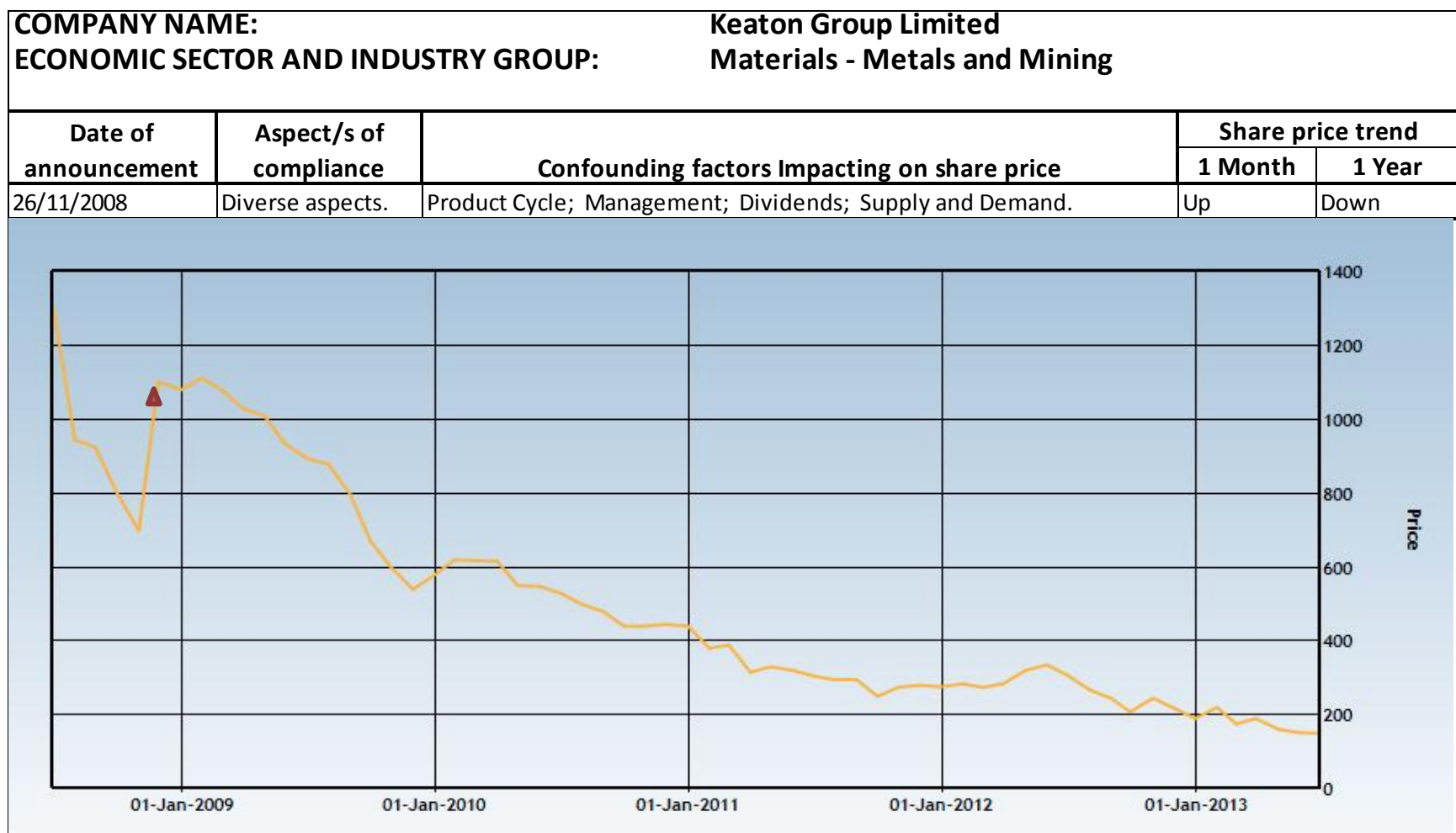


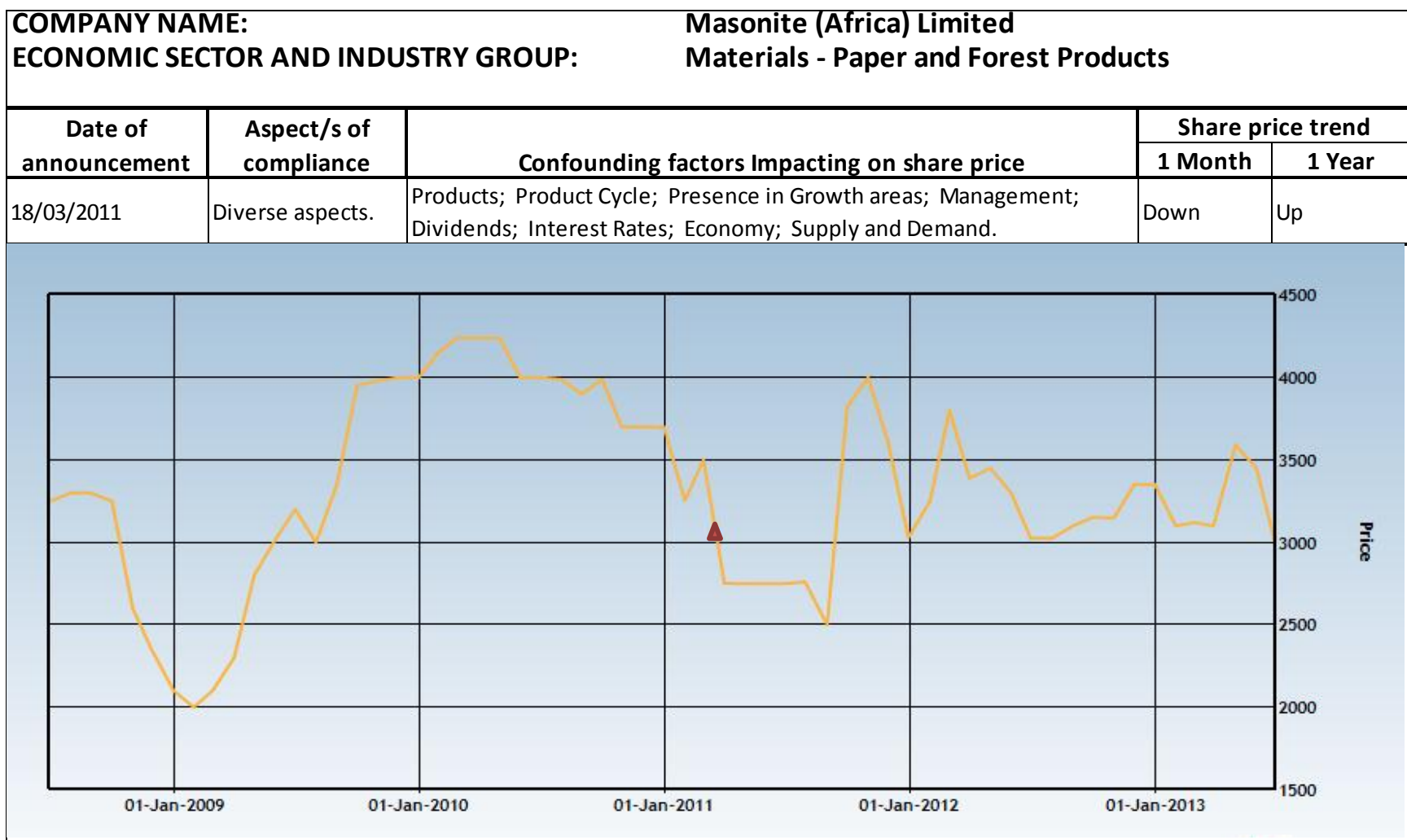








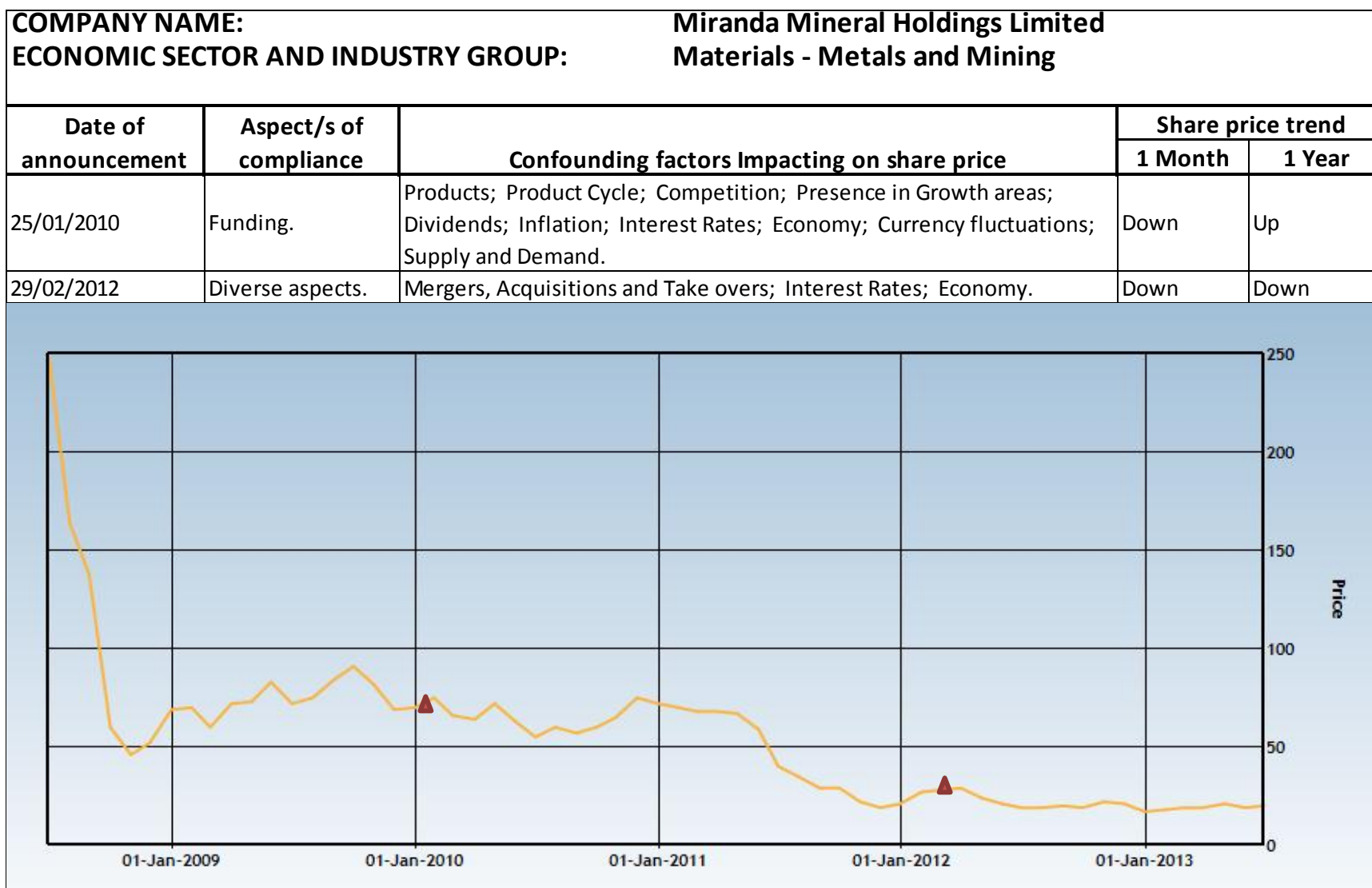


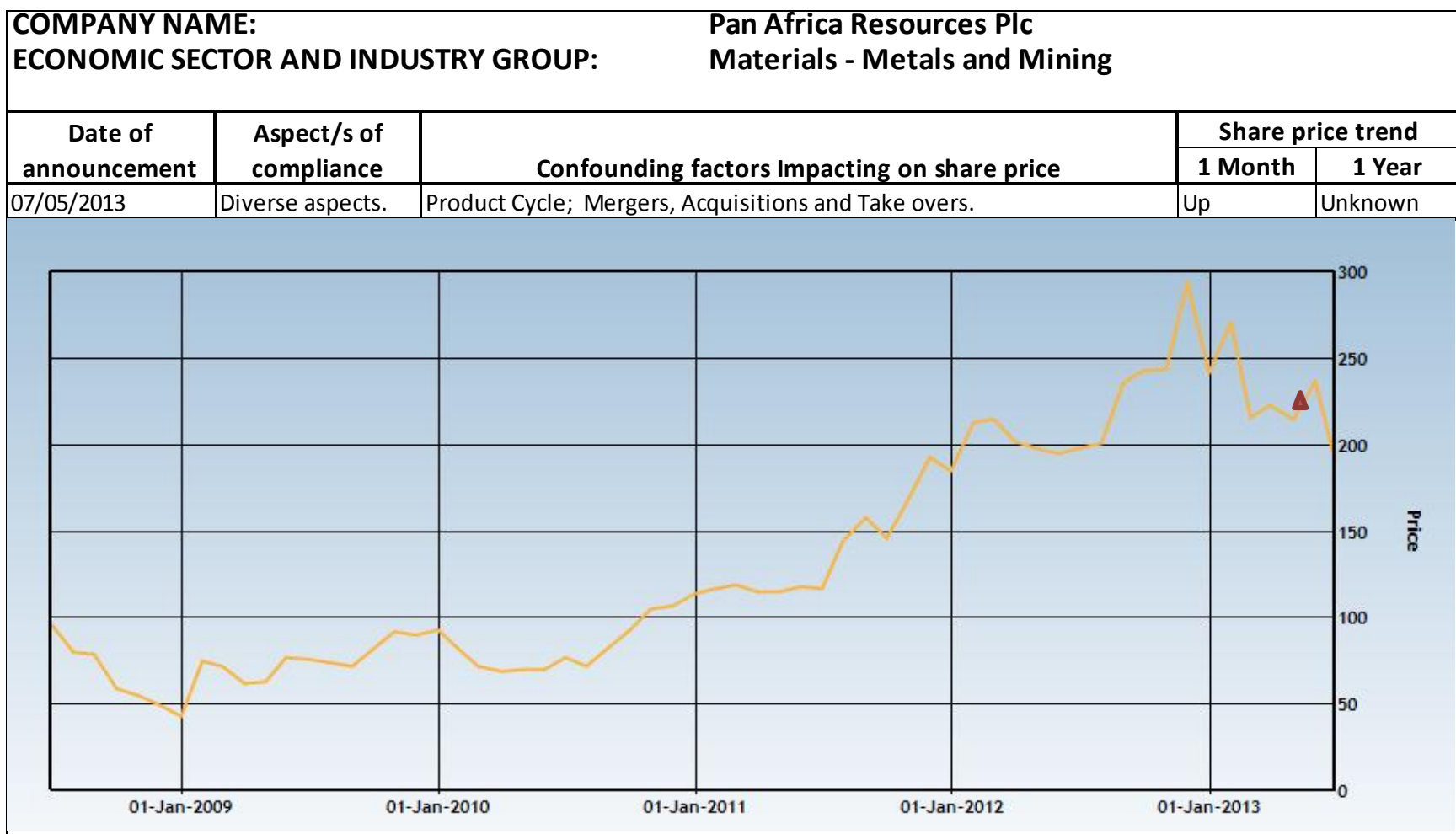


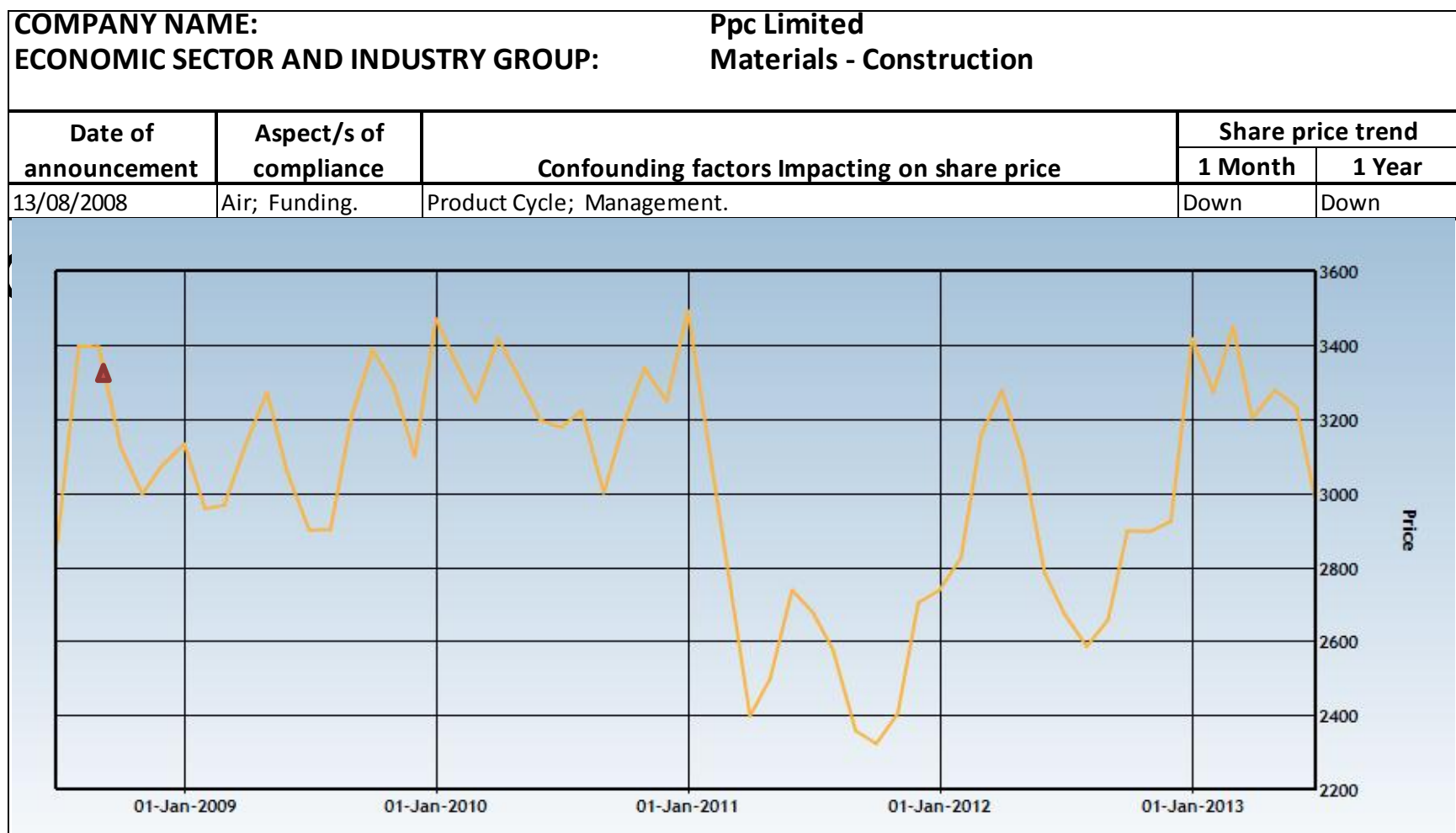
COMPANY NAME:		Massmart Holdings Limited		
ECONOMIC SECTOR AND INDUSTRY GROUP:		Consumer Staples - All Industry Groups		
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
22/02/2012	Using Resources efficiently; Waste.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand.	Down	Up
22/08/2012	Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand	Down	Unknown

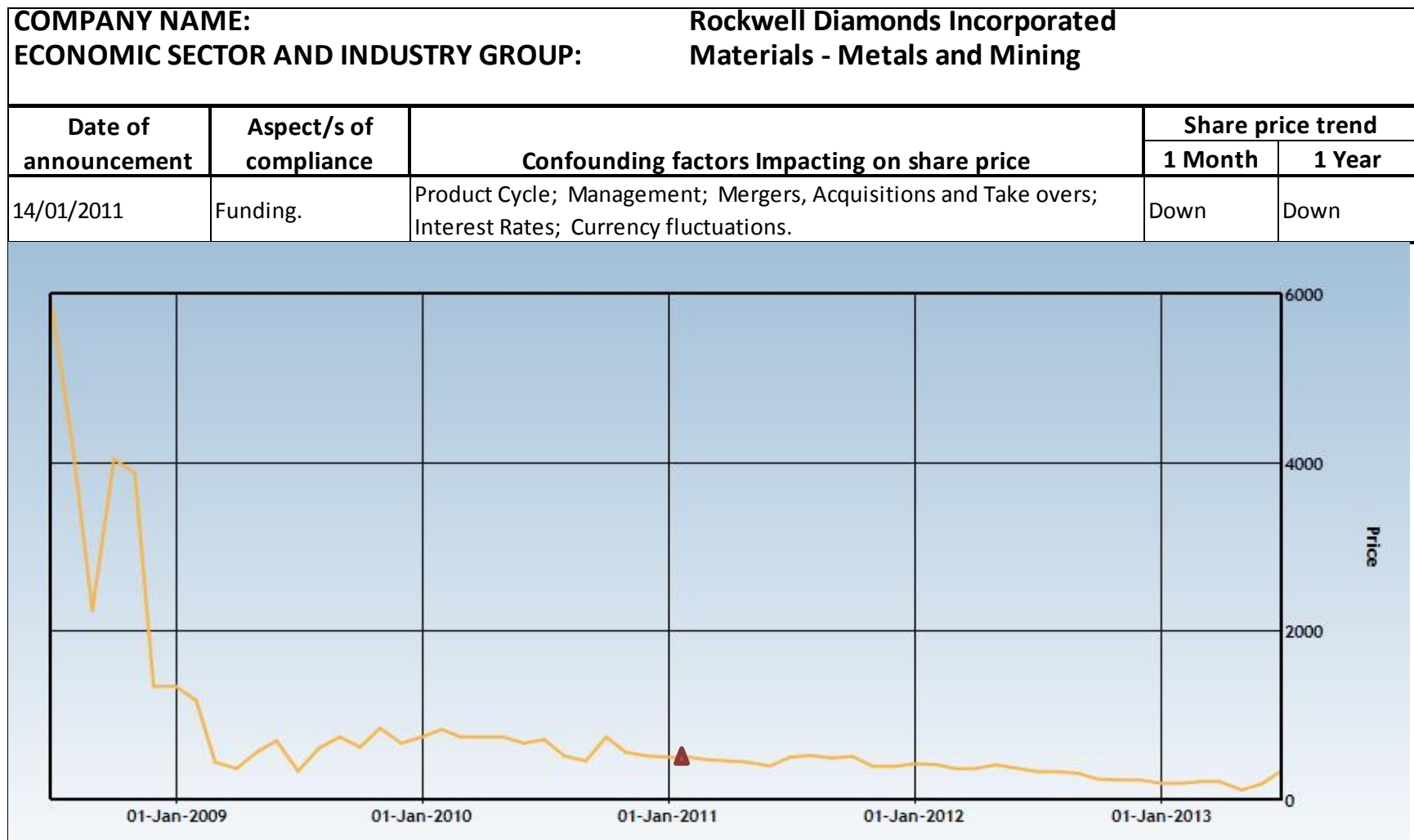
The graph illustrates the share price trend of Massmart Holdings Limited from January 2009 to January 2013. The Y-axis represents Price (6000 to 20000) and the X-axis represents time (01-Jan-2009 to 01-Jan-2013). The price starts around 6000 in Jan 2009, rises to about 12000 by Jan 2010, then fluctuates between 14000 and 18000 until Jan 2012. Two red triangles mark specific points in Jan 2012. The price then rises sharply to nearly 20000 by Jan 2013.

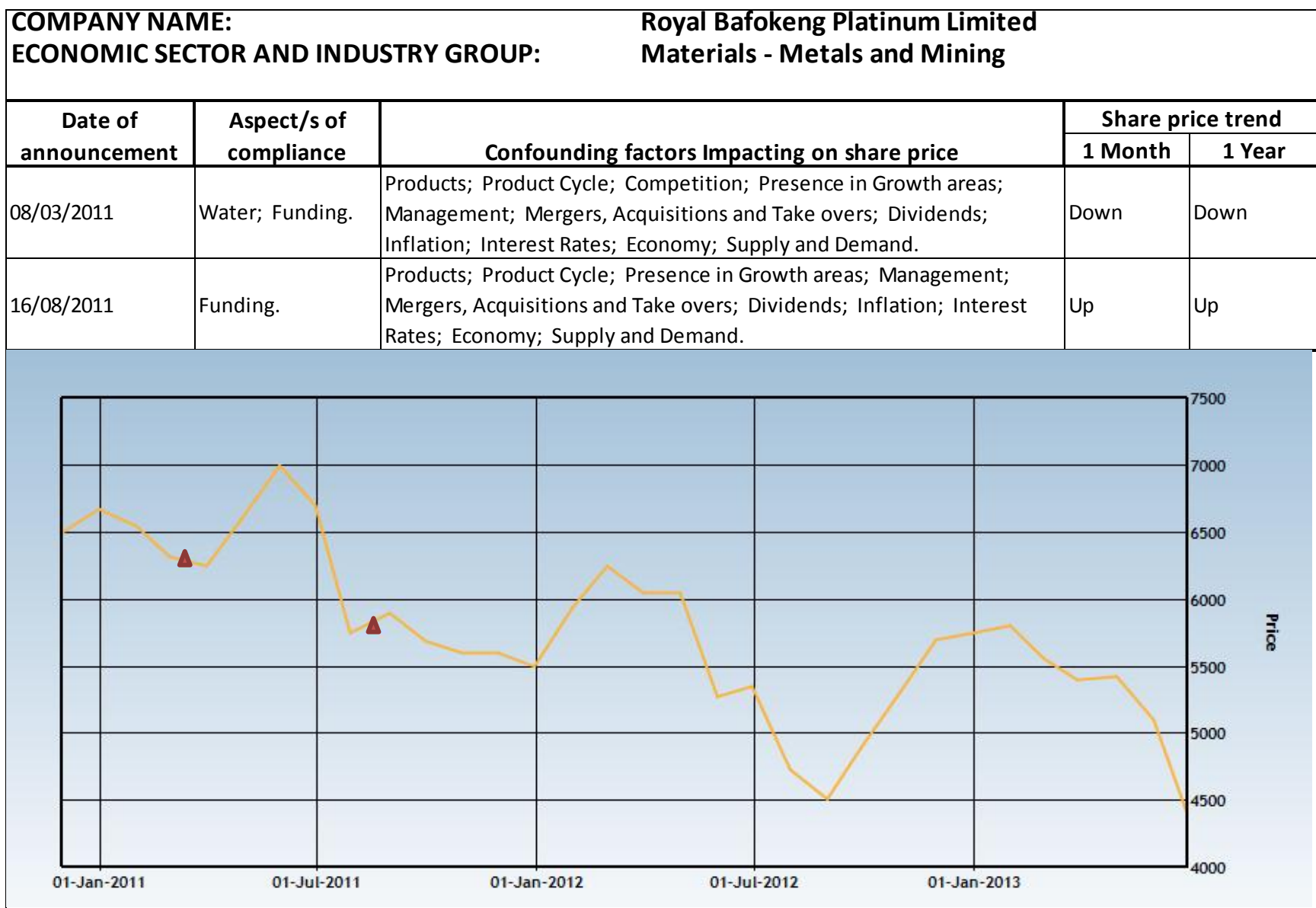
Date	Price
01-Jan-2009	6000
01-Jan-2010	12000
01-Jan-2011	14000
01-Jan-2012	18000
01-Jan-2013	20000











COMPANY NAME:		Sovereign Food Investments Limited		
ECONOMIC SECTOR AND INDUSTRY GROUP:		Consumer Staples - Food Beverages and Tobacco		
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
28/02/2009	Waste; Funding; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Institutional Investors; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand.	Down	Up
23/11/2009	Using Resources efficiently; Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Institutional Investors; Management; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand.	Down	Down
28/02/2011	Using Resources efficiently; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Institutional Investors; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand.	Down	Down
29/02/2012	Funding; Diverse aspects.	Product Cycle; Competition; Presence in Growth areas; Institutional Investors; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand.	Down	Down
28/02/2013	Waste; Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Institutional Investors; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand.	Up	Unknown



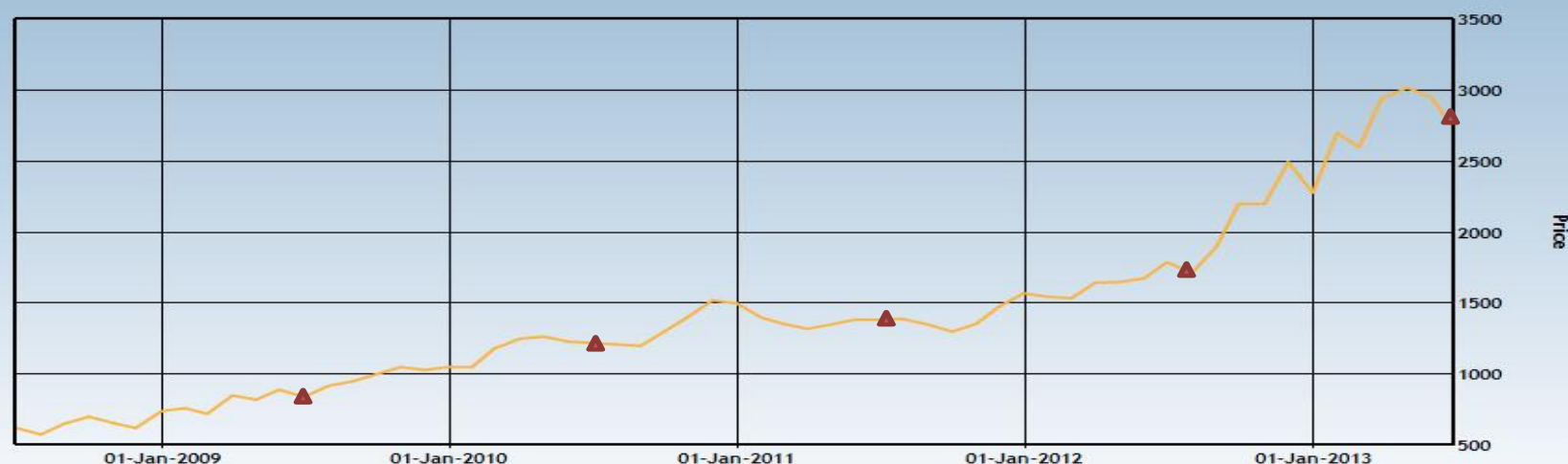
COMPANY NAME:		Sanjaard Limited		
ECONOMIC SECTOR AND INDUSTRY GROUP:		Materials - Chemicals		
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
29/02/2012	Using Resources efficiently; Waste.	Products; Competition; Presence in Growth areas; Management; Dividends; Interest Rates; Currency fluctuations; Political factors.	Up	Up
28/02/2013	Using Resources efficiently; Air; Waste; Diverse aspects.	Products; Competition; Presence in Growth areas; Management; Dividends; Interest Rates; Currency fluctuations; Political factors.	Down	Unknown

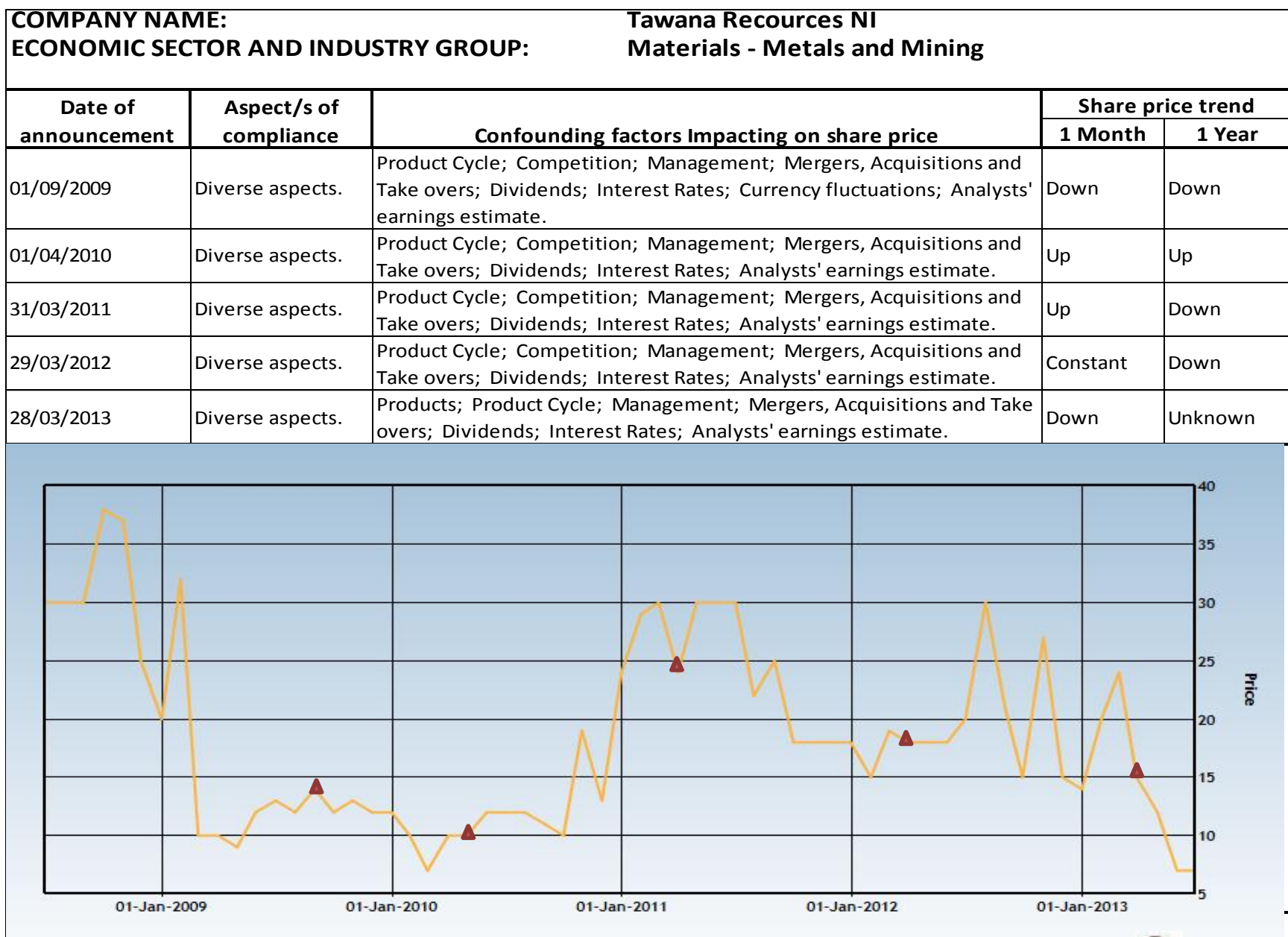
The chart displays the share price of Sanjaard Limited over a four-year period. The x-axis represents time, with major ticks for 01-Jan-2009, 01-Jan-2010, 01-Jan-2011, 01-Jan-2012, and 01-Jan-2013. The y-axis represents the price, ranging from 250 to 650 in increments of 50. The price line shows a general upward trend with significant volatility. It starts at approximately 350 in early 2009, dips to 300, then rises to a plateau around 400 in 2010. After a sharp drop to 300 in early 2011, it recovers to 400 by mid-2011. The price continues to rise, reaching a peak of about 620 in late 2012, before dropping sharply to around 450 in early 2013. Two red triangles are placed on the chart: one at approximately (01-Jan-2012, 500) and another at approximately (01-Jan-2013, 500).

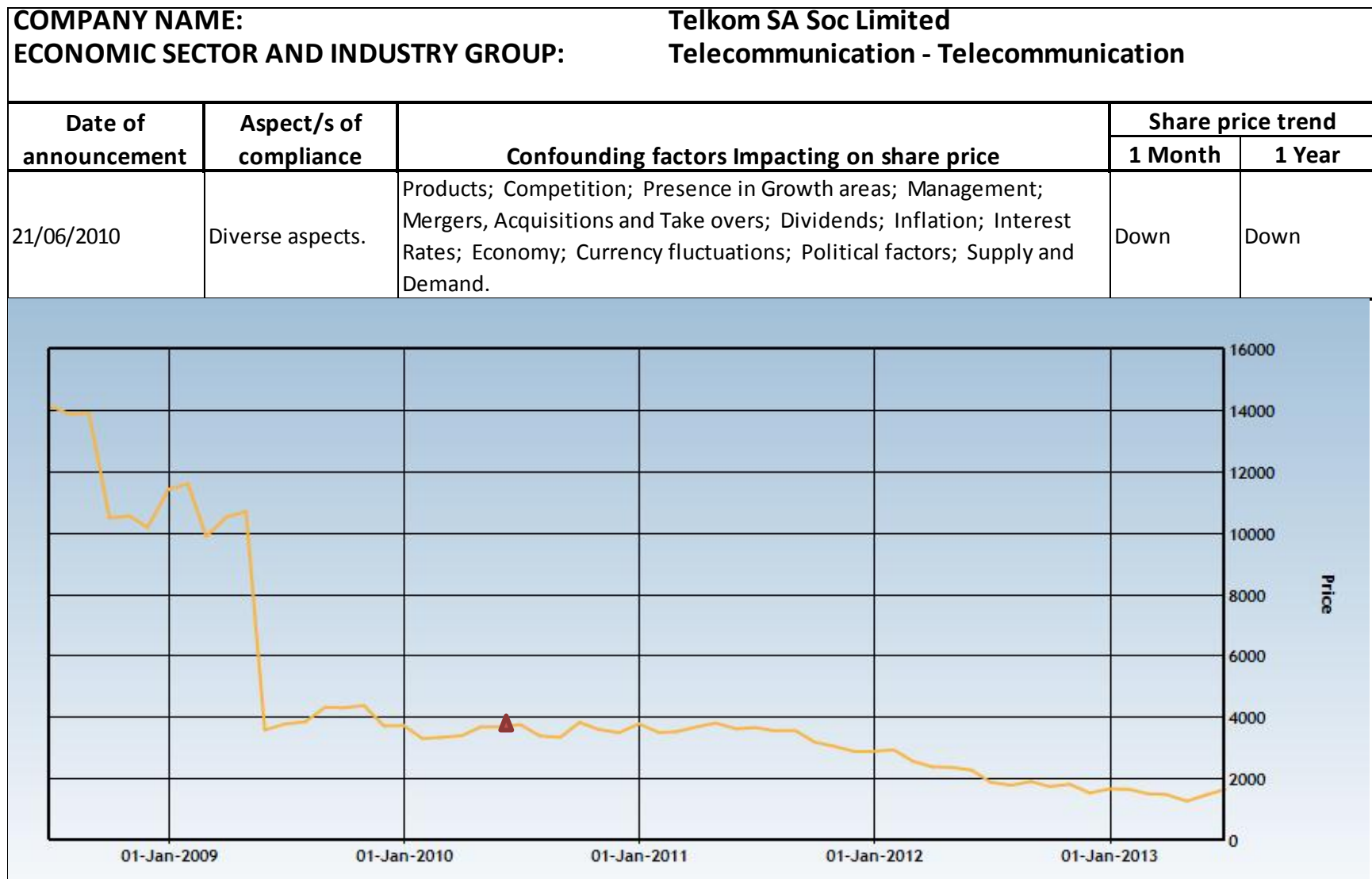
Date	Price
01-Jan-2009	350
01-Jan-2010	400
01-Jan-2011	400
01-Jan-2012	500
01-Jan-2013	450

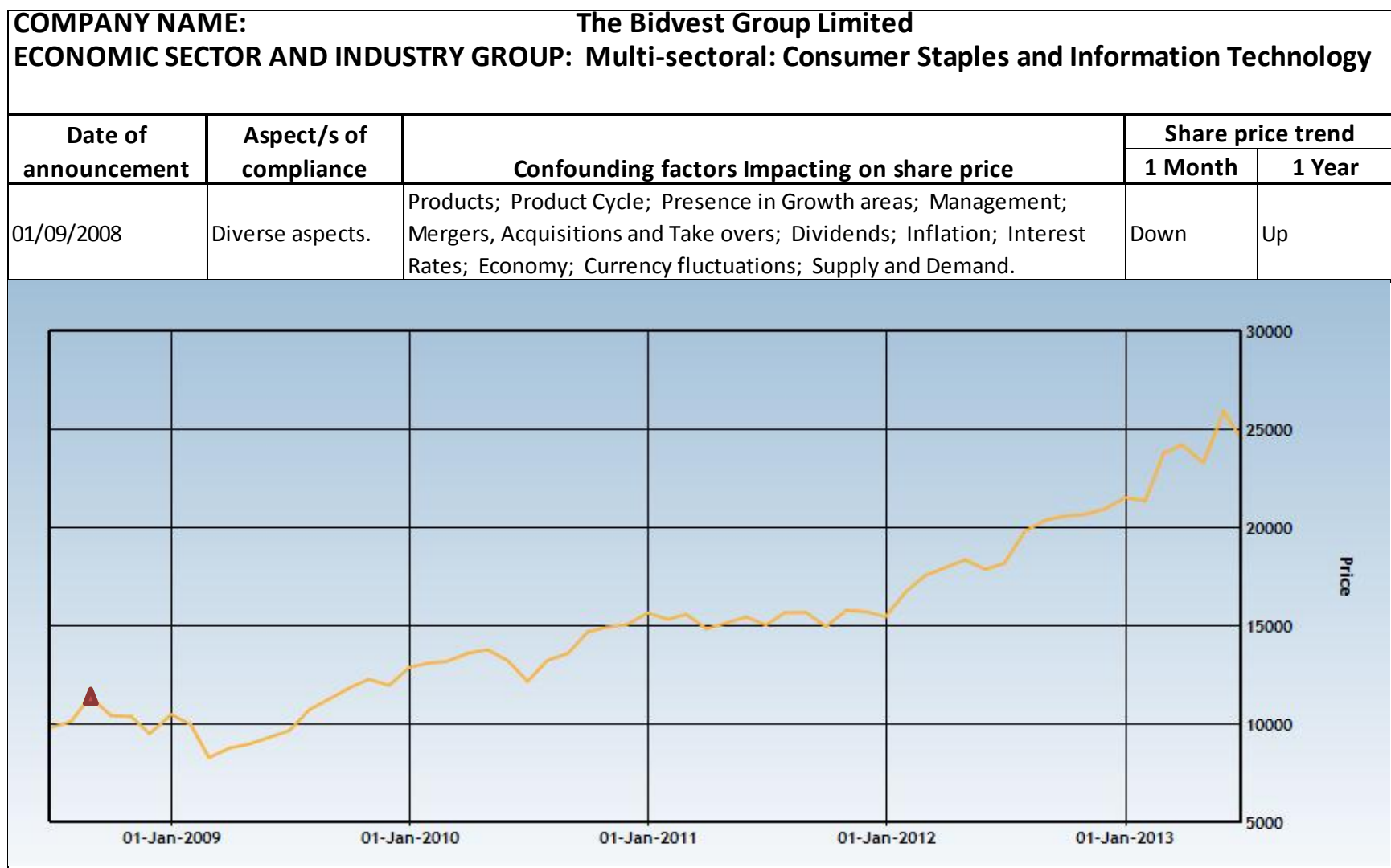
COMPANY NAME:	Spur Corporation Limited
ECONOMIC SECTOR AND INDUSTRY GROUP:	Consumer Discretionary - Hotels, Restaurants and Leisure

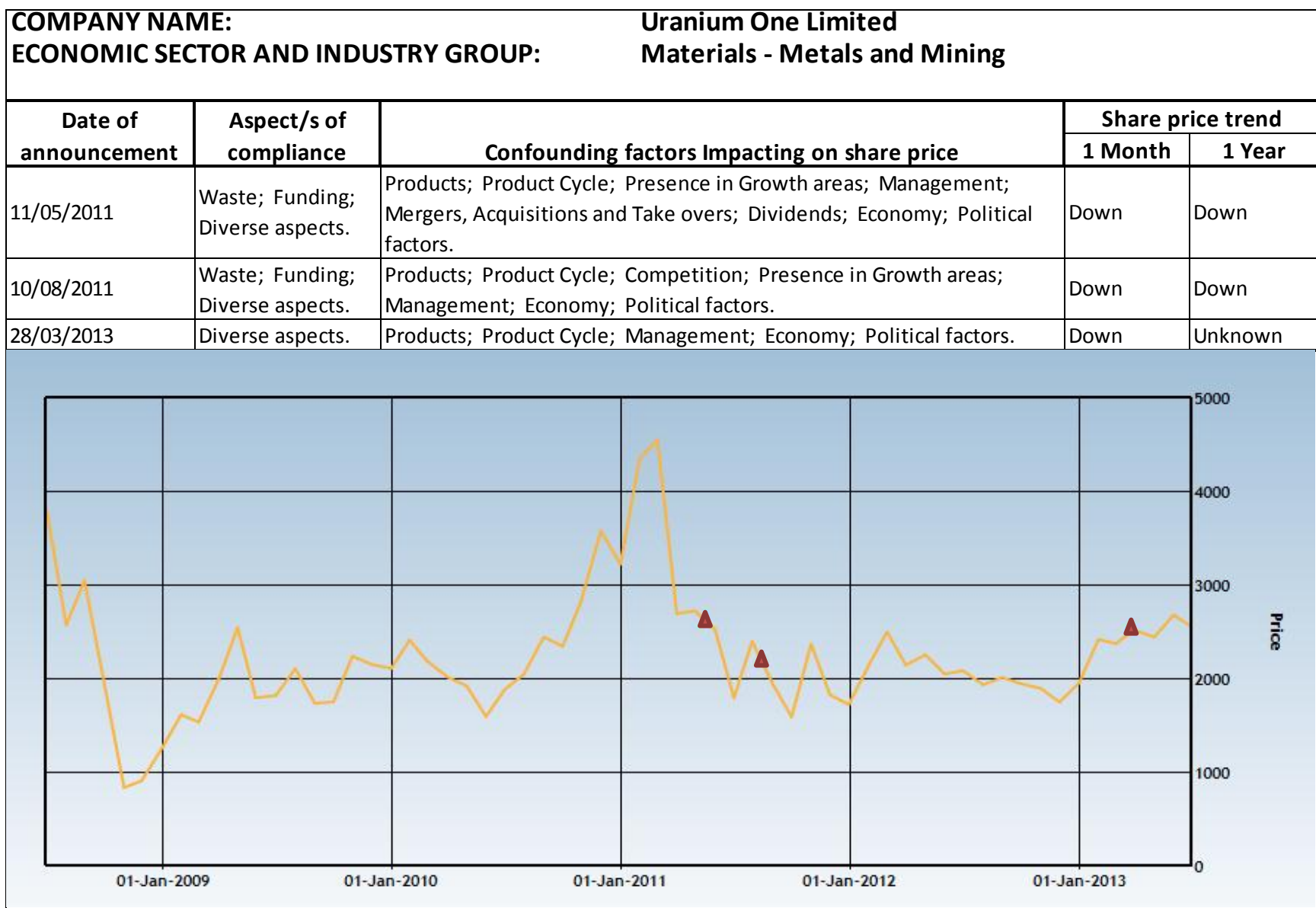
Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
30/06/2009	Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Supply and Demand; Analysts' earnings estimate.	Up	Up
30/06/2010	Biodiversity; Using Resources efficiently; Water.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Supply and Demand; Analysts' earnings estimate.	Down	Up
30/06/2011	Using Resources efficiently; Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Supply and Demand; Analysts' earnings estimate.	Down	Up
30/06/2012	Using Resources efficiently; Water; Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Supply and Demand; Analysts' earnings estimate.	Up	Up
30/06/2013	Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Interest Rates; Bond Markets; Economy; Currency fluctuations; Supply and Demand; Analysts' earnings estimate.	Unknown	Unknown

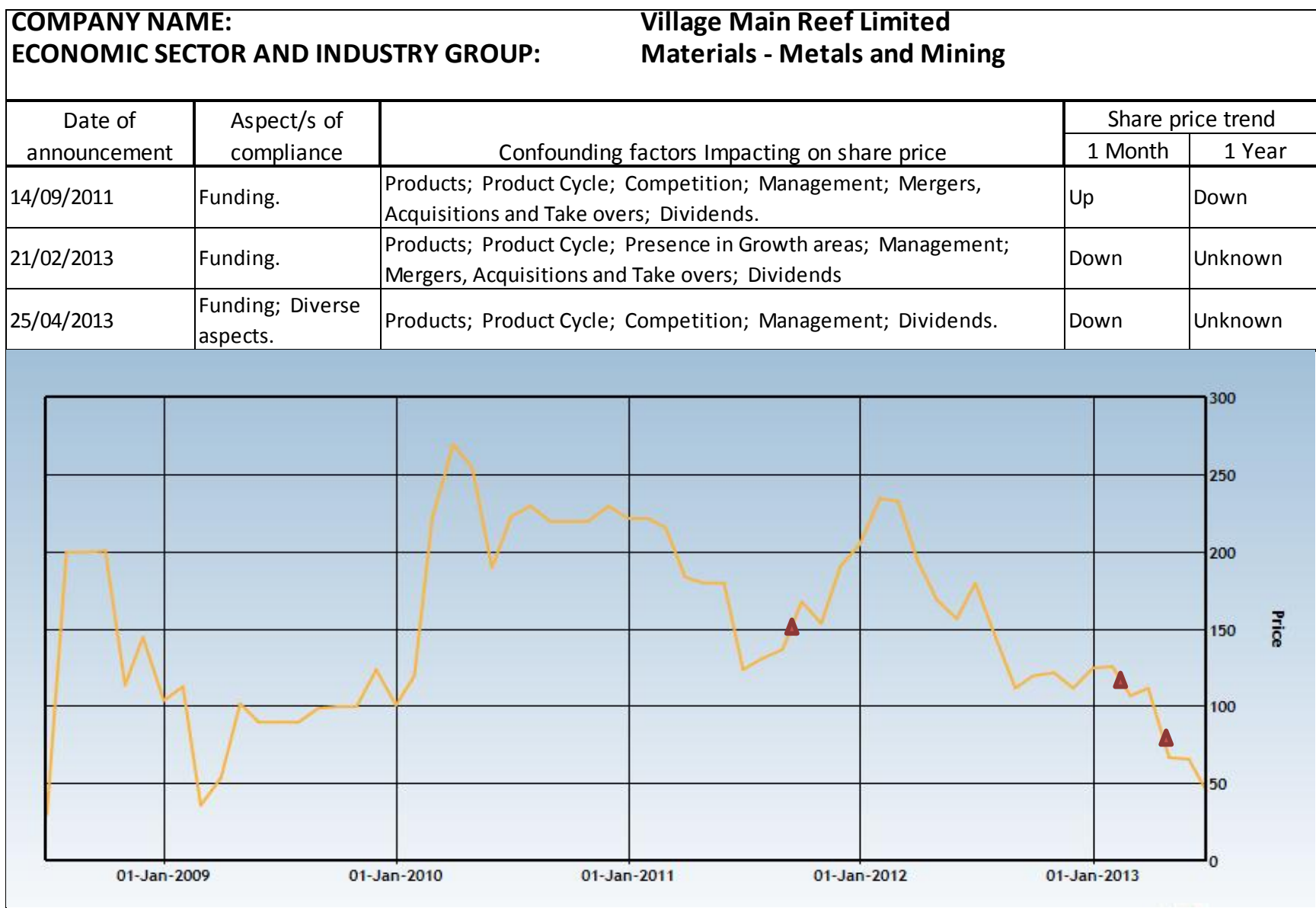


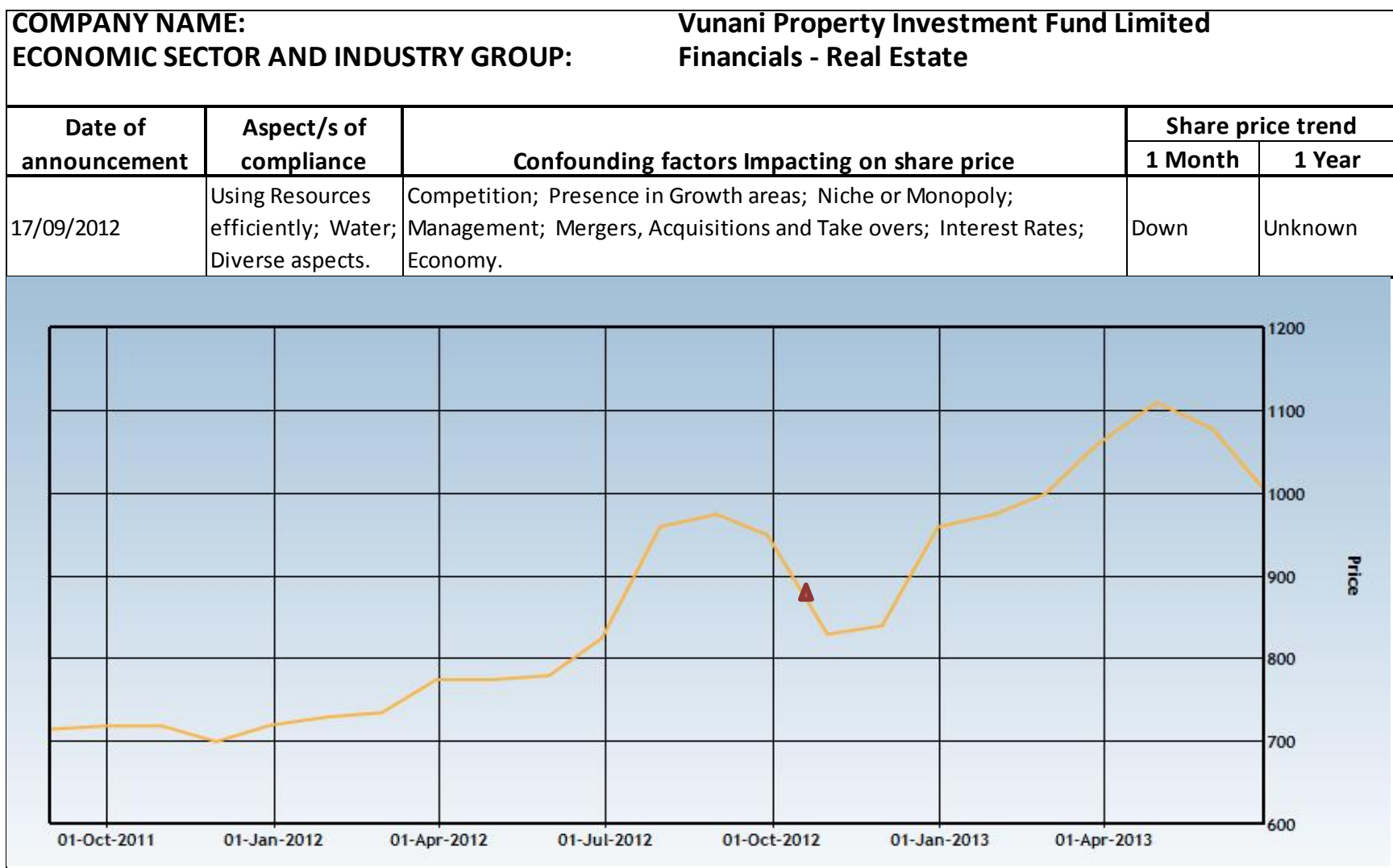








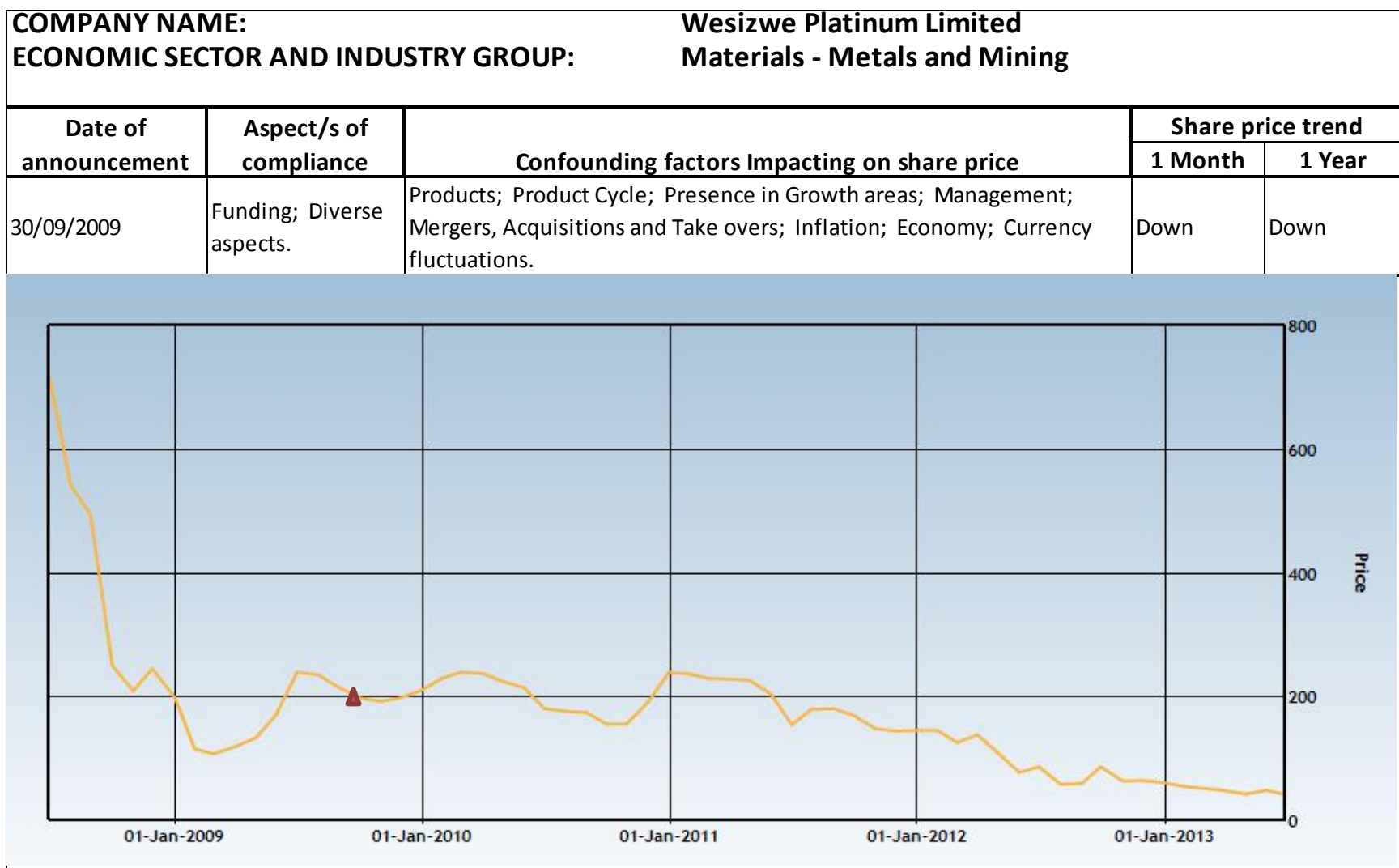




COMPANY NAME:	Wescoal Holdings Limited
ECONOMIC SECTOR AND INDUSTRY GROUP:	Materials - Metals and Mining

Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
23/08/2010	Water.	Products; Management; Mergers, Acquisitions and Take overs; Analysts' earnings estimate.	Up	Down
02/12/2010	Water; Diverse aspects.	Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Supply and Demand.	Up	Down
20/06/2012	Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Management; Mergers, Acquisitions and Take overs; Dividends; Inflation; Supply and Demand.	Up	Up





COMPANY NAME:	Wilderness Holdings Limited
ECONOMIC SECTOR AND INDUSTRY GROUP:	Consumer Discretionary - Hotels, Restaurants and Leisur

Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
03/09/2012	Diverse aspects.	Mergers, Acquisitions and Take overs.	Down	Down



COMPANY NAME:	York Timber Holdings Limited
ECONOMIC SECTOR AND INDUSTRY GROUP:	Materials - Paper and Forest Products

Date of announcement	Aspect/s of compliance	Confounding factors Impacting on share price	Share price trend	
			1 Month	1 Year
14/03/2011	Diverse aspects.	Products; Product Cycle; Presence in Growth areas; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand.	Down	Down
12/03/2012	Diverse aspects.	Products; Product Cycle; Competition; Presence in Growth areas; Inflation; Interest Rates; Economy; Currency fluctuations; Supply and Demand.	Up	Up



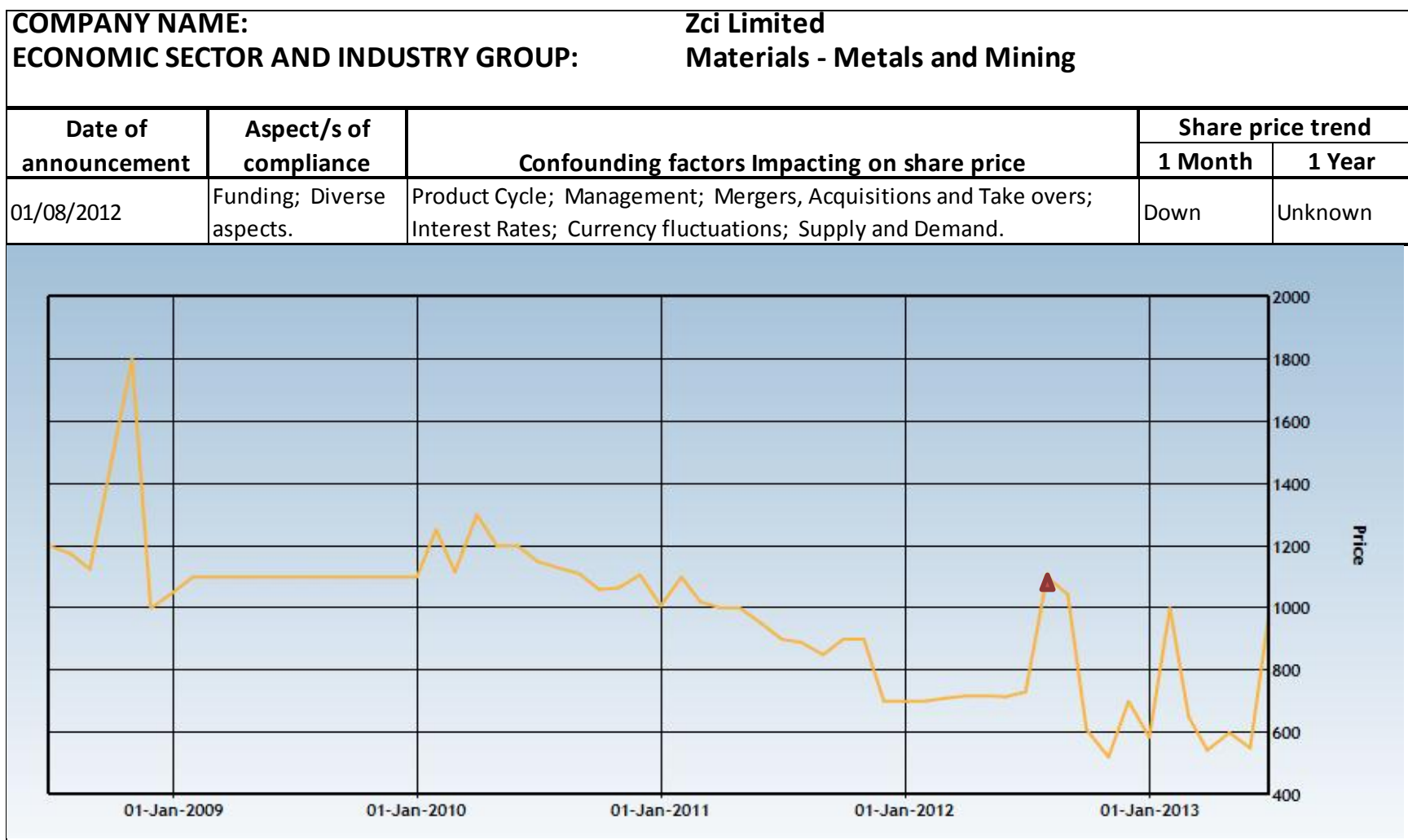


TABLE 3.4: Comparison of share price fluctuations prior to and after announcements

SHARE PRICE					PERSENTAGE FLUCTUATION IN SHARE PRICE			
On the date of proof of commitment to environmental accounting principles	1 Month after proof of commitment to environmental accounting principles	1 Month before proof of commitment to environmental accounting principles	1 Year after proof of commitment to environmental accounting principles	1 Year before proof of commitment to environmental accounting principles	1 Month after proof of commitment to environmental accounting principles	1 Month after no proof of commitment to environmental accounting principles	1 Year after proof of commitment to environmental accounting principles	1 Year after no proof of commitment to environmental accounting principles
7920	8312	8198	11450	8435	4.95%	-3.51%	44.57%	-6.11%
23710	16150	22700	16100	12400	-31.89%	4.26%	-32.10%	91.21%
16100	15000	13147	15428	26000	-6.83%	18.34%	-4.17%	-38.08%
18200	19450	17400	21490	11300	6.87%	4.40%	18.08%	61.06%
355	340	330	457	345	-4.23%	7.04%	28.73%	2.90%
42200	38899	54800	22606	41400	-7.82%	-29.86%	-46.43%	1.93%
15350	17800	19000	28900	48190	15.96%	-23.78%	88.27%	-68.15%
24968	25000	22300	29345	42200	0.13%	10.69%	17.53%	-40.83%
24968	25000	22300	29345	42200	0.13%	10.69%	17.53%	-40.83%
28900	29850	33835	37149	18249	3.29%	-17.08%	28.54%	58.36%
30490	32850	27750	34720	15180	7.74%	8.99%	13.87%	100.86%
32470	28135	29990	35250	18300	-13.35%	7.64%	8.56%	77.43%
37149	34442	36499	32650	29690	-7.29%	1.75%	-12.11%	25.12%
35250	32900	34388	29579	32407	-6.67%	2.45%	-16.09%	8.77%
32001	28399	33150	24654	29580	-11.26%	-3.59%	-22.96%	8.18%
32650	31380	32499	27460	38107	-3.89%	0.46%	-15.90%	-14.32%
30300	29579	32540	24929	34388	-2.38%	-7.39%	-17.73%	-11.89%
29579	26680	30300	22500	35200	-9.80%	-2.44%	-23.93%	-15.97%
24335	25120	26660	21052	33075	3.23%	-9.55%	-13.49%	-26.42%

27653	27051	24748			-2.18%	10.51%		
28050	25950	27540			-7.49%	1.82%		
27174	31685	25150	28600	28300	16.60%	7.45%	5.25%	-3.98%
29600	29805	28302	29480	24125	0.69%	4.39%	-0.41%	22.69%
29500	28480	30370	32825	31990	-3.46%	-2.95%	11.27%	-7.78%
31500	32190	31333	31650	29150	2.19%	0.53%	0.48%	8.06%
35700	33234	31970	38000	32216	-6.91%	10.45%	6.44%	10.81%
33595	31050	31100	32975	29500	-7.58%	7.43%	-1.85%	13.88%
30999	29105	33050	30536	32494	-6.11%	-6.62%	-1.49%	-4.60%
27200	30536	26029	16821	31100	12.26%	4.31%	-38.16%	-12.54%
23220	22109	26146			-4.78%	-12.60%		
16914	16100	18869			-4.81%	-11.56%		
14552	13735	17230			-5.61%	-18.40%		
20100	18200	22300	9950	12100	-9.45%	-10.95%	-50.50%	66.12%
8300	7925	10101	10380	14350	-4.52%	-21.70%	25.06%	-42.16%
7910	6505	9501	10650	15950	-17.76%	-20.11%	34.64%	-50.41%
8068	9493	7200	8810	22980	17.66%	10.76%	9.20%	-64.89%
9750	11893	9500	8690	19200	21.98%	2.56%	-10.87%	-49.22%
10640	10270	12150	8050	8299	-3.48%	-14.19%	-24.34%	28.21%
10500	8900	10840	8600	8425	-15.24%	-3.24%	-18.10%	24.63%
8810	7999	9000	8980	8068	-9.21%	-2.16%	1.93%	9.20%
8630	8198	7847	6836	10095	-5.01%	9.07%	-20.79%	-14.51%
8500	8795	7950	6711	10290	3.47%	6.47%	-21.05%	-17.40%
7961	7880	9240	5535	7550	-1.02%	-16.07%	-30.47%	5.44%
6975	5856	7580	4569	8450	-16.04%	-8.67%	-34.49%	-17.46%
6630	6320	6880	3551	8535	-4.68%	-3.77%	-46.44%	-22.32%
6819	6520	6858	3505	8200	-4.38%	-0.57%	-48.60%	-16.84%
3645	3120	3860			-14.40%	-5.90%		
2699	3211	2715			18.97%	-0.59%		
600	835	300	1198	2775	39.17%	50.00%	99.67%	-78.38%
800	712	860	1077	2625	-11.00%	-7.50%	34.63%	-69.52%

710	698	690	740	1350	-1.69%	2.82%	4.23%	-47.41%
602	625	650	900	495	3.82%	-7.97%	49.50%	21.62%
1110	1300	940	800	600	17.12%	15.32%	-27.93%	85.00%
1198	1060	930	820	668	-11.52%	22.37%	-31.55%	79.34%
840	690	978	350	1050	-17.86%	-16.43%	-58.33%	-20.00%
220	180	215			-18.18%	2.27%		
220	185	215			-15.91%	2.27%		
9300	8061	9390			-13.32%	-0.97%		
1500	1674	1400	1160	2885	11.60%	6.67%	-22.67%	-48.01%
1050	1270	1050	1505	1280	20.95%	0.00%	43.33%	-17.97%
26463	25030	23900	29834	36904	-5.42%	9.69%	12.74%	-28.29%
27700	29529	27766			6.60%	-0.24%		
27292	26425	26527	39699	26700	-3.18%	2.80%	45.46%	2.22%
49655	45820	50300			-7.72%	-1.30%		
290	285	303	335	175	-1.72%	-4.48%	15.52%	65.71%
340	340	326	290	240	0.00%	4.12%	-14.71%	41.67%
662	719	695	181	848	8.61%	-4.98%	-72.66%	-21.93%
805	854	723	325	1220	6.09%	10.19%	-59.63%	-34.02%
453	476	658	171	900	5.08%	-45.25%	-62.25%	-49.67%
326	260	480			-20.25%	-47.24%		
160	330	192			106.25%	-20.00%		
192	235	177	215	170	22.40%	7.81%	11.98%	12.94%
125	145	120			16.00%	4.00%		
630	780	620	977	460	23.81%	1.59%	55.08%	36.96%
1455	1645	1300			13.06%	10.65%		
5495	5540	5400			0.82%	1.73%		
115	125	110			8.70%	4.35%		
335	401	307	1070	2510	19.70%	8.36%	219.40%	-86.65%
372	433	439	931	2174	16.40%	-18.01%	150.27%	-82.89%
407	400	335	740	1057	-1.72%	17.69%	81.82%	-61.49%
600	650	458	1294	306	8.33%	23.67%	115.67%	96.08%

204	207	194	291	195	1.47%	4.90%	42.65%	4.62%
10350	9500	12500	8870	6770	-8.21%	-20.77%	-14.30%	52.88%
11450	11950	11128	17319	8501	4.37%	2.81%	51.26%	34.69%
630	605	740	107	980	-3.97%	-17.46%	-83.02%	-35.71%
7900	6560	10095	9245	11209	-16.96%	-27.78%	17.03%	-29.52%
10510	10940	10215	10570	7001	4.09%	2.81%	0.57%	50.12%
10550	10450	9601	11096	10801	-0.95%	9.00%	5.18%	-2.32%
11262	10511	10009			-6.67%	11.13%		
7113	7568	7341	9342	8699	6.40%	-3.21%	31.34%	-18.23%
7425	7065	7649	7860	10189	-4.85%	-3.02%	5.86%	-27.13%
7041	6554	6760			-6.92%	3.99%		
1755	1475	1725			-15.95%	1.71%		
1090	1060	700			-2.75%	35.78%		
2800	2751	3700	3500	4240	-1.75%	-32.14%	25.00%	-33.96%
18151	16480	17957	18700	14650	-9.21%	1.07%	3.02%	23.90%
16950	16786	16840			-0.97%	0.65%		
80	72	70	70	79	-10.00%	12.50%	-12.50%	1.27%
28	27	26	19	68	-3.57%	7.14%	-32.14%	-58.82%
215	225	212			4.65%	1.40%		
3325	3120	2725	2840	4130	-6.17%	18.05%	-14.59%	-19.49%
600	510	600	515	750	-15.00%	0.00%	-14.17%	-20.00%
6295	6700	6550			6.43%	-4.05%		
5539	6078	6187			9.73%	-11.70%		
451	650	540	850	1210	44.12%	-19.73%	88.47%	-62.73%
840	815	1035	580	480	-2.98%	-23.21%	-30.95%	75.00%
590	580	670	574	850	-1.69%	-13.56%	-2.71%	-30.59%
576	550	530	460	590	-4.51%	7.99%	-20.14%	-2.37%
574	560	530			-2.44%	7.67%		
495	500	495	510	371	1.01%	0.00%	3.03%	33.42%
510	500	401			-1.96%	21.37%		
840	900	890	1220	620	7.14%	-5.95%	45.24%	35.48%

1220	1210	1230	1385	840	-0.82%	-0.82%	13.52%	45.24%
1385	1350	1386	1789	1220	-2.53%	-0.07%	29.17%	13.52%
1789	1715	1700	2739	1385	-4.14%	4.97%	53.10%	29.17%
2739	3000	2874			9.53%	-4.93%		
14	12	12	11	30	-14.29%	14.29%	-21.43%	-53.33%
8	10	7	26	15	25.00%	12.50%	225.00%	-46.67%
24	30	30	18	10	25.00%	-25.00%	-25.00%	140.00%
18	18	19	15	25	0.00%	-5.56%	-16.67%	-28.00%
15	12	24			-20.00%	-60.00%		
3760	3348	3558	3535	3525	-10.96%	5.37%	-5.98%	6.67%
11220	10300	9750	11420	13910	-8.20%	13.10%	1.78%	-19.34%
2900	1910	2771	2198	1770	-34.14%	4.45%	-24.21%	63.84%
2239	1771	2050	1800	2120	-20.90%	8.44%	-19.61%	5.61%
2525	2447	2379			-3.09%	5.78%		
171	165	137	125	210	-3.51%	19.88%	-26.90%	-18.57%
109	111	125			1.83%	-14.68%		
68	65	109			-4.41%	-60.29%		
965	925	965			-4.15%	0.00%		
122	125	116	65	90	2.46%	4.92%	-46.72%	35.56%
118	119	130	75	74	0.85%	-10.17%	-36.44%	59.46%
68	85	66	152	84	25.00%	2.94%	123.53%	-19.05%
199	193	215	156	251	-3.02%	-8.04%	-21.61%	-20.72%
350	350	350	230	425	0.00%	0.00%	-34.29%	-17.65%
369	364	365	365	310	-1.36%	1.08%	-1.08%	19.03%
362	375	350	401	369	3.59%	3.31%	10.77%	-1.90%
1100	1045	731			-5.00%	33.55%		
AVERAGE FLUCTUATION					0.12%	-1.15%	6.49%	-0.03%
STANDARD DEVIATION					15.05%	15.38%	50.57%	44.19%
P-VALUE (T-TEST)					0.25406		0.20969	

TABLE 3.5: Share price fluctuations of sampled companies from 1 June 2012 to 1 June 2013.

COMPLY WITH ENVIRONMENTAL ACCOUNTING STANDARDS AS SET OUT BY SRI REGULATIONS				DO NOT COMPLY WITH ENVIRONMENTAL ACCOUNTING STANDARDS AS SET OUT BY SRI REGULATIONS			
Company Name	Share Price 01 June 2012	Share Price 01 June 2013	Percentage Fluctuation in Share Price	Company Name	Share Price 01 June 2012	Share Price 01 June 2013	Percentage Fluctuation in Share Price
MATERIALS SECTOR							
Anglo-American Plc	25800	23517	-8.85%	Assore Ltd	28621	35649	24.56%
Kumba Iron Ore	53500	51800	-3.18%	First Uranium	69	13	-81.16%
BHP Billiton	22390	29480	31.67%	Metmar Ltd	270	147	-45.56%
Palabora Mining Company Ltd	14799	10740	-27.43%	Thabex Ltd	35	35	0.00%
Average Fluctuation			-1.95%	Average Fluctuation			-25.54%
Standard Deviation			21.38%	Standard Deviation			40.79%
P - Value - Materials Sector							0.41
CONSUMER STAPLES SECTOR							
British American Tobacco	40203	55612	38.33%	Distell Group	8650	12300	42.20%
Lewis Group	7379	6250	-15.30%	Sovereign Food	498	525	5.42%
Oceana Group Ltd	4605	8600	86.75%	Awethu Breweries	5	6	20.00%
Woolworths Holdings Int.	4857	7257	49.41%	Clover Industries	1326	1816	36.95%
Average Fluctuation			39.80%	Average Fluctuation			26.14%
Standard Deviation			36.52%	Standard Deviation			14.51%
P - Value - Consumer Staples Sector							0.57

FINANCIALS SECTOR							
Growthpoint Properties	2110	2539	20.33%	Acucap Properties	4096	4598	12.26%
Investec Ltd	4370	7200	64.76%	Annuity Properties	497	580	16.70%
Sanlam	16750	17935	7.07%	Barclays Africa	14950	14943	-0.05%
Standard Bank Group	11480	11186	-2.56%	London Fin. & Investment	250	355	42.00%
Average Fluctuation			22.40%	Average Fluctuation			17.73%
Standard Deviation			25.77%	Standard Deviation			15.30%
P - Value - Financials Sector							0.80
INDUSTRIALS SECTOR							
Grindrod	1419	2011	41.72%	Ellies Holdings	363	920	153.44%
Imperial Holdings	16825	21093	25.37%	Howden Africa	2250	3451	53.38%
NamPak	2301	3491	51.72%	Sea Kay Holdings	4	1	-75.00%
PPC Ltd	2785	3235	16.16%	Trencor Ltd	4830	6840	41.61%
Average Fluctuation			33.74%	Average Fluctuation			43.36%
Standard Deviation			13.84%	Standard Deviation			80.98%
P - Value - Industrials Sector							0.85

3.4 DISCUSSION

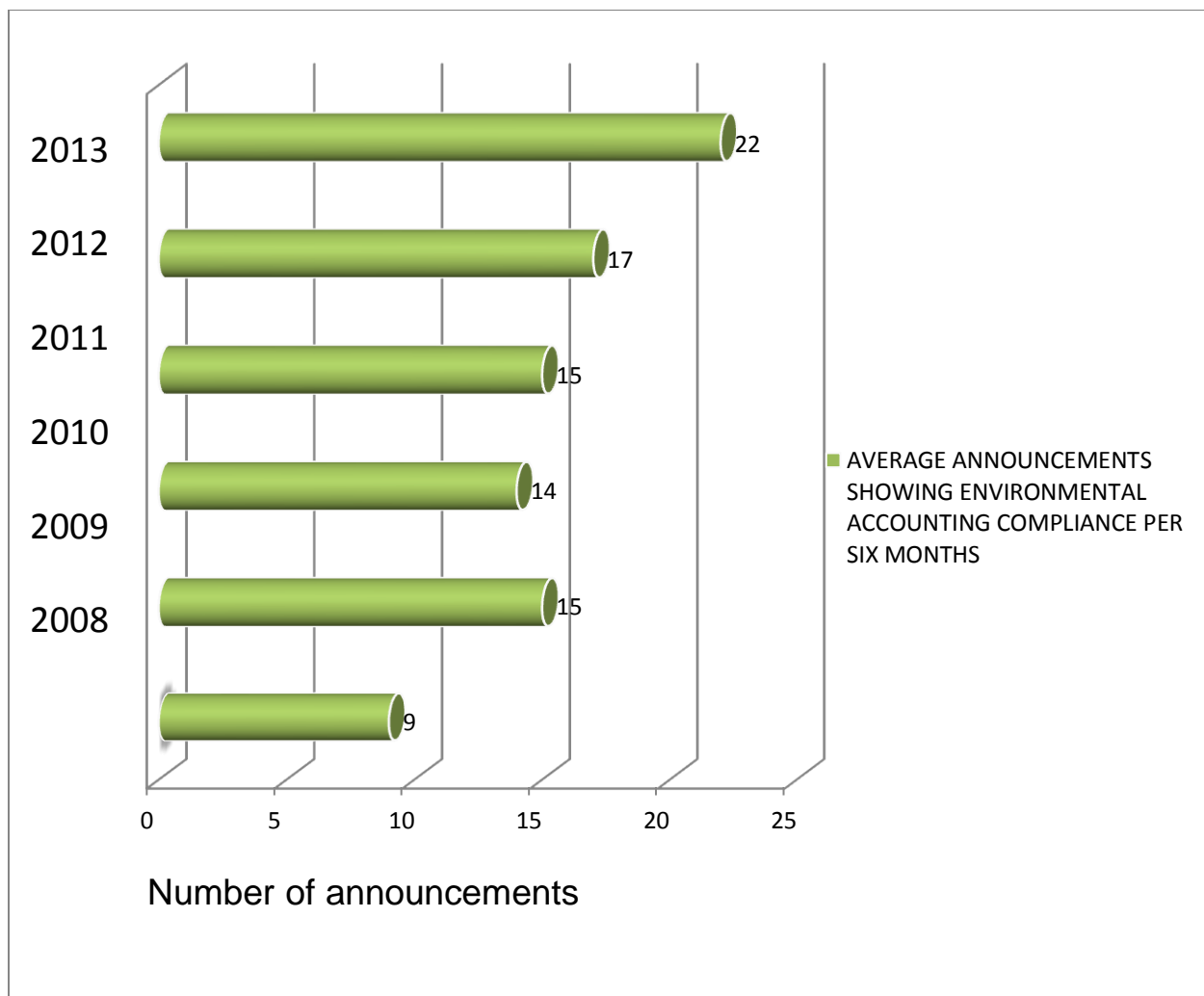
Through a count it was determined that 56 instances of upward trends and 80 instances of downward trends after one month followed announcements that included compliance with environmental accounting principles (one constant and one unknown). Furthermore 52 instances of upward trends and 54 instances of downward trends after one year followed these announcements (30 unknown). Due to both upward and downward trends in both instances and the presence of many confounding variables, it is not possible to detect a direct correlation between compliance with environmental accounting principles and fluctuations in share price of a company. This is confirmed by the t-test results' p-values being 0.25 and 0.21 for one month and one year interval share price fluctuations respectively correlated to the presence of an announcement revealing compliance with environmental accounting principles. These p-values are not seen as statistically significant, as the Cochrane handbook (2013:502) explains that p-values of less than 0.05 are reported as statistically significant.

Further confirmation of this statement is derived from the t-tests done to determine a correlation between share price fluctuations of companies that is formally known as pro environmental accounting as evidenced by their stance as SRI Index constituents versus those not on the SRI Index and the share price fluctuations of sampled companies. T-tests revealed the following p-values: 0.41 (Materials sector); 0.57 (Consumer staples sector); 0.80 (Financials sector); and 0.85 (Industrials sector). Thus there were no statistically significant p-values and therefore no correlation between share price and compliance with environmental accounting principles could be affirmed. For this reason, no ante to or post to approach could be argued for to predict a positive financial inclination. Thus, this study confirms the work of Lai and Wong (2012:267) who stated that no economic motivation could be connected to compliance with environmental accounting principles.

Though neither hypothesis could be disregarded, there are some useful conclusions to be drawn from this study. Firstly, only 48 out of 336 listed companies (14%) announced environmental accounting principles compliance with shareholders. This might indicate

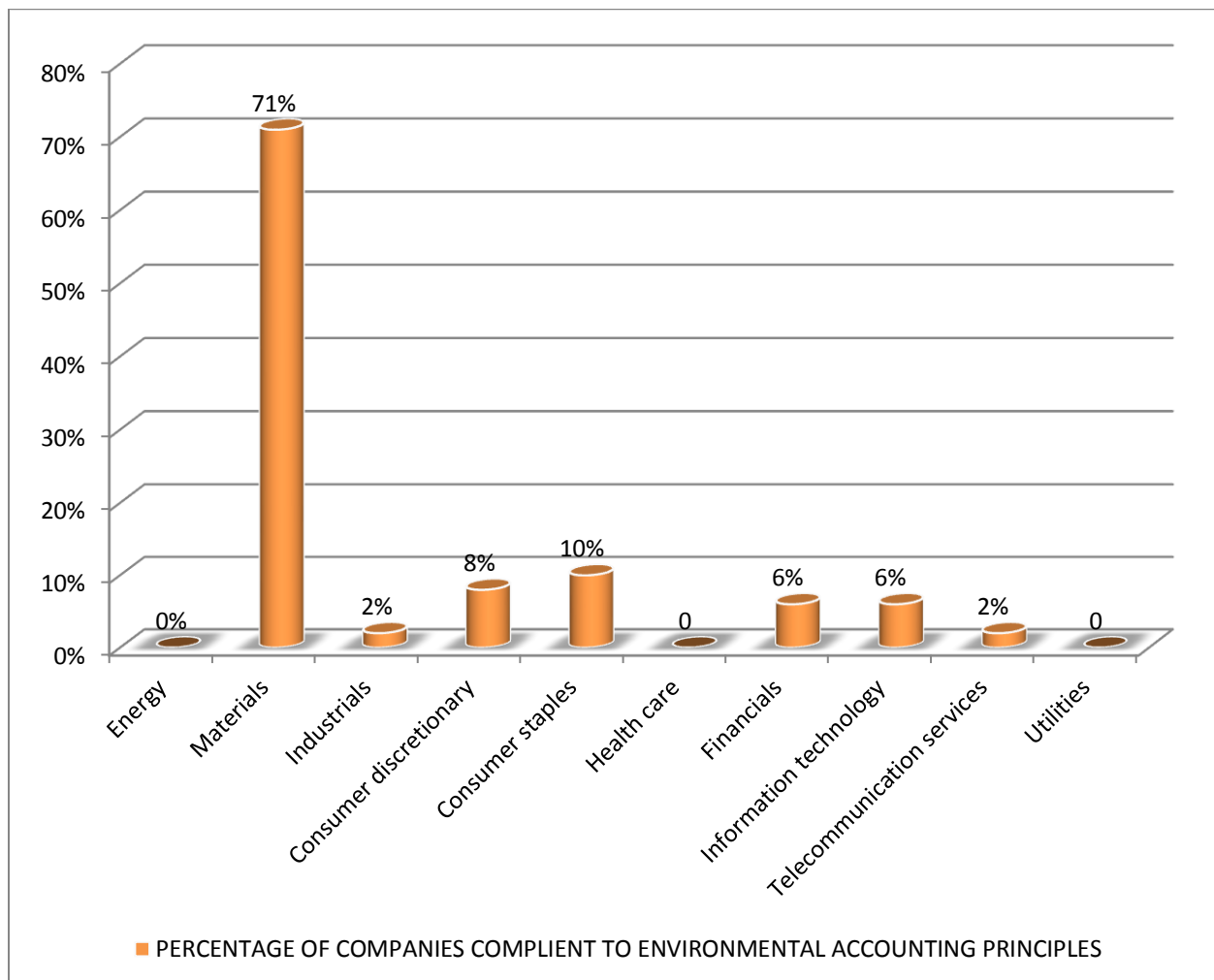
that compliance is either not prioritised or not seen as profitable. The unfortunate truth is that profitability thereof could not be proven.

Secondly and more positively, there seems to be a rapid improvement in compliance with environmental accounting principles by listed companies during the past five years. Results to confirm this are represented by Graph 3.1. According to Pelletier and Tyedmers (2011:342) the rising prominence of environmental accounting compliance reflects increasing awareness of the pressing necessity of managing both for environmental dimensions that underpin all economic activity. If the environment is not taken care of, the economy will suffer under the depletion of natural resources.



Graph 3.1: Increase of compliance with environmental accounting principles.

Thirdly, in contrast with known literature arguing that most environmental accounting principles are employed in the agriculture, forestry, fishing and hunting industries, (Wagner, 2011:8), the highest ratio of compliance with these principles as evidenced by announcements was found in the metals and mining industry group (n = 27 from the sample of 48 [56%]). Graph 3.2 reveals the different economic sectors' presence in compliance with environmental accounting principles. Note that Metals and Mining fall under Materials (refer table 3.1). This correlates with the highest percentage of companies listed on the SRI Index (n = 27; 27%) being from the materials sector.

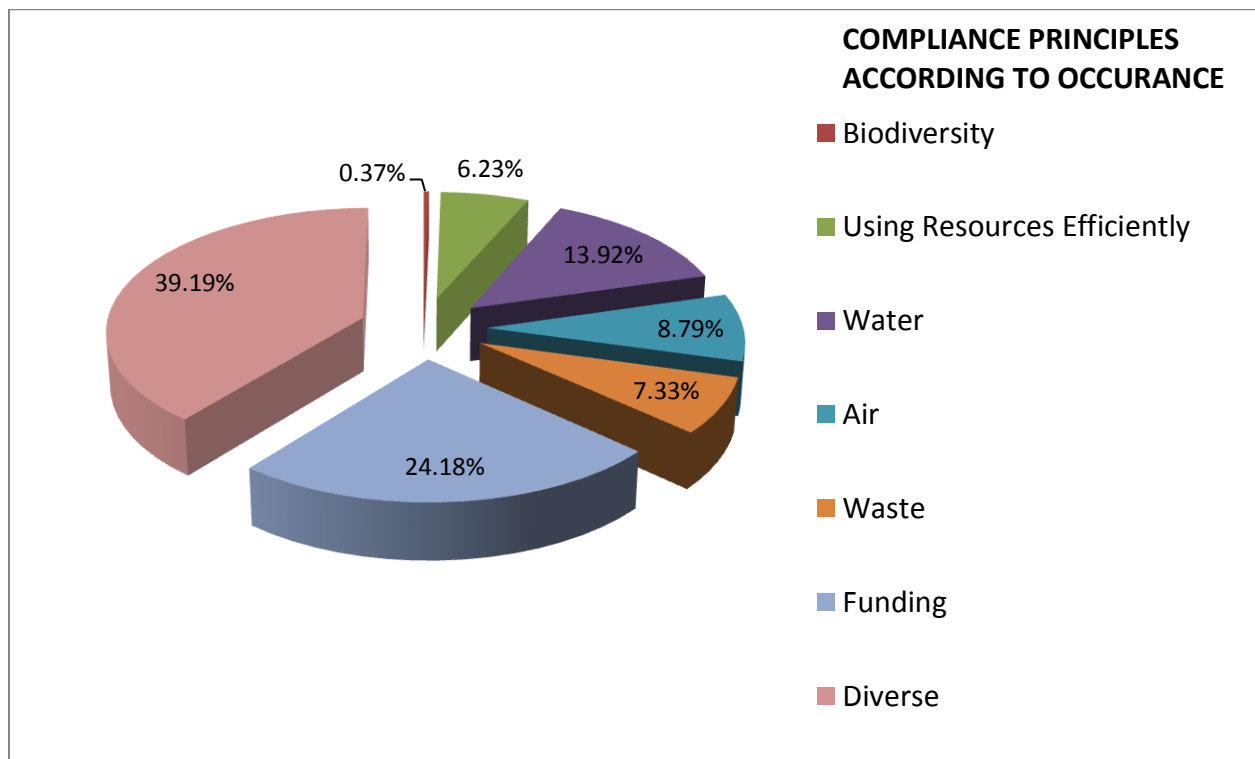


Graph 3.2: Compliance with environmental accounting principles as evidenced by company announcements, by Economic Sector.

Comparing other sector's compliance related to the SRI Index, 21% (n = 16) is from the consumer staples sector, 21% (n = 16) from the financial sector, 16% (n = 12) from the

industrials sector, 4% (n = 3) is from the health care and telecommunication services sectors respectively, 3% (n = 2) is from the consumer discretionary and information technology sectors respectively, 1% (n = 1) is from the energy sector where as the utilities sector is unrepresented. The sectors most represented on the SRI Index are also most active in announcing environmental accounting principle compliance, with the exception of the industrials sector that is well represented on the SRI Index (n = 12) but does not regularly announce compliance initiatives to shareholders (only 2% of announcements made are represented by this sector).

Lastly, most companies choose to comply with diverse principles of environmental accounting. These may include efforts to be in line with environmental legislation, rehabilitation of the environment, mentioning environmental obligation or responsibilities or consideration and environmental management studies. Graph 3.3 reveals the slice of compliance each principle of environmental accounting receives from listed companies as evidenced by the number of announcements each principle was represented in.



Graph 3.3: Compliance principles according to occurrence

3.5 SUMMARY

Data collection and analysis were discussed. Though no direct correlation could be found between environmental accounting principle compliance and share price fluctuation of listed companies, some relevant and valuable conclusions were drawn, viz. more announcements referring to environmental accounting compliance were posted in 2012 and 2013 compared to those in the earlier three years; the materials sector revealed greatest compliance with environmental accounting principles; of all principles of environmental accounting, diverse principles are most often complied with; and the p-values determined in t-tests revealed that no statistically significant correlation exists between compliance with these principles and share price fluctuations.

CHAPTER 4

4.1 INTRODUCTION

According to Brink (2006:12) some of the reasons for conducting research include establishing scientifically defensible reasons for activities, providing a basis for standard-setting and providing a basis for self-correction of misinterpretations and myths. For this reason research was conducted to firstly find out whether it is scientifically defensible to advise companies to take part in environmental accounting principles for financial prosperity, then to standardise advice accordingly and lastly to do away with false information that could be deceiving companies. Thus follow the evaluation of the study, conclusions drawn from it, limitations to the study and recommendations derived from the study.

4.2 EVALUATION OF THE STUDY

The main objective of this study was to investigate the relationship between the commitment to environmental accounting principles and the share price of listed companies. Though this relationship was deemed inconclusive, some valuable conclusions were drawn regarding compliance with environmental accounting principles such as mentioned in 4.5. Sub-objectives included the following:

- To describe environmental accounting principles as being committed to by the Main Board Listed companies of the Johannesburg Stock Exchange (JSE) in South Africa. These principles were discussed successfully with reference to growth in compliance over the last five years, what companies are more predominant in complying and which principles are more often adhered to.
- To describe stock price fluctuations as experienced by the same Main Board Listed companies of the Johannesburg Stock Exchange (JSE) in South Africa since their commitment to environmental accounting principles. Though stock price fluctuations were investigated, no direct correlation after announcement of commitment to environmental accounting principles could be found, and

- To determine whether there is a relationship between the commitment to environmental accounting principles and the share price of sampled Main Board Listed companies of the Johannesburg Stock Exchange (JSE) in South Africa. It was determined that there is no definite relationship between these two variables.

4.3 LIMITATIONS OF THE STUDY

The following limitations of the study were identified:

- Many confounding factors impacted on the share price fluctuations, thus direct correlation of study variables were not possible.
- Only announcements of companies on the Main Board of the Johannesburg Stock Exchange were taken into account; however, some practices not divulged by companies in these announcements could also have an influence on the fluctuation of share prices.

4.4 RECOMMENDATIONS

The following recommendations were made as emanating from the study:

- Companies should be advised that compliance with environmental accounting principles is paramount for sustainability and long term survival due to dependence on natural resources.
- At the present time, share price health should not be connected to compliance with environmental accounting principles, though this should not be the primary incentive for such compliance; and
- In developing countries such as South Africa, extraneous influences such as carbon tax and pollution penalties might have to be implemented to have companies comply with needed environmental standards.

4.5 CONCLUSIONS

The following conclusions were drawn from the study:

- There exists low compliance with environmental accounting principles among Main Board listed companies of the Johannesburg Stock Exchange.
- There is no correlation between the compliance with environmental accounting principles and fluctuations in share price.
- The mining industry currently holds the greatest compliance with environmental accounting principles if judged according to divulgence by means of announcements; and
- Most companies choose to comply with diverse practices of environmental accounting compliance.

4.6 SUMMARY

The study was seen as successful in fulfilling its main and sub-objectives. Limitations and recommendations were discussed for future improvement.

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ADDENDUM A: LIST OF LISTED COMPANIES

1.	1Time Holdings Limited
2.	Adaptit Holdings
3.	AECI Limited
4.	Absa Bank Limited
5.	Acucap Properties Limited
6.	Adcock Ingram Holdings Limited
7.	Adcorp Holdings Limited
8.	Adrenna Property Group Limited
9.	Advtech Limited
10.	Afgri Limited
11.	African And Overseas Enterprises Limited
12.	African Bank Investments Limited
13.	African Media Entertainment Limited
14.	African Oxygen Limited
15.	African Rainbow Minerals Limited
16.	Afrimat Limited
17.	Afrocentric Investment Corp Limited
18.	Ag Industries Limited
19.	Alexander Forbes Pref Share Inv Limited
20.	Allied Electronics Corporation Limited
21.	Amalgamated Electronic Corp Limited
22.	Andulela Investment Holdings Limited
23.	Anglo American Plat Limited
24.	Anglo American Plc
25.	AngloGold Ashanti Limited
26.	Annuity Properties Ltd
27.	Aquarius Platinum Limited
28.	Arb Holdings Limited
29.	Arcelormittal South Africa Limited
30.	Ardor SA Limited
31.	Argent Industrial Limited
32.	Arrowhead Properties Limited
33.	Ascension Properties Limited
34.	Aspen Pharmacare Holdings Limited
35.	Assore Limited
36.	Astral Foods Limited
37.	Astrapak Limited
38.	Atlatsa Resources Corporation
39.	Attacq Limited
40.	Austro Group Limited
41.	Aveng Limited
42.	Avi Limited
43.	Awethu Breweries Limited
44.	B&W Instrumentation & Electrical Limited
45.	Barloworld Limited

46.	Basil Read Holdings Limited
47.	Bauba Platinum Limited
48.	Bell Equipment Limited
49.	BHP Billiton Plc
50.	Blue Label Telecoms Limited
51.	Bonatla Property Holdings Limited
52.	Bowler Metcalf Limited
53.	Brait Se
54.	Brimstone Investment Corporation Limited
55.	British American Tobacco Plc
56.	Buildmax Limited
57.	Business Connexion Group Limited
58.	Cadiz Holdings Limited
59.	Cafca Limited
60.	Calgro M3 Holdings Limited
61.	Cape Empowerment Limited
62.	Capevin Holdings Limited
63.	Capital & Counties Properties Plc
64.	Capital Property Fund
65.	Capitec Bank Holdings Limited
66.	Cargo Carriers Limited
67.	Cashbuild Limited
68.	Caxton Ctp Publishers & Printers Limited
69.	City Lodge Hotels Limited
70.	Clicks Group Limited
71.	Clientele Limited
72.	Clover Industries Limited
73.	Coal Of Africa Limited
74.	Comair Limited
75.	Combined Motor Holdings Limited
76.	Command Holdings Limited
77.	Compagnie Financière Richemont SA
78.	Compu-Clearing Outsourcing Limited
79.	Conduit Capital Limited
80.	Consolidated Infrastructure Grp Ltd
81.	Control Instruments Group Limited
82.	Convergenet Holdings Limited
83.	Coronation Fund Managers Limited
84.	Corwil Investments Limited
85.	Country Bird Holdings Limited
86.	Crookes Brothers Limited
87.	Cullinan Holdings Limited
88.	Curro Holdings Limited
89.	Datacentrix Holdings Limited
90.	Datatec Limited

91.	Delrand Resources Limited
92.	Delta Emd Limited
93.	Delta Property Fund Limited
94.	Digicore Holdings Limited
95.	Dipula Income Fund Limited
96.	Discovery Limited
97.	Distell Group Limited
98.	Distrib. And Warehousing Network Ltd
99.	Dorbyl Limited
100.	DRDgold Limited
101.	Eastern Platinum Limited
102.	Efficient Group Limited
103.	Elb Group Limited
104.	Ellies Holdings Limited
105.	Emira Property Fund
106.	Eoh Holdings Limited
107.	Eqstra Holdings Limited
108.	Erbacoin Investment Holdings Limited
109.	Esorfranki Limited
110.	Evraz Highveld Steel & Vanadium Limited
111.	Exxaro Resources Limited
112.	Fairvest Property Holdings Limited
113.	Famous Brands Limited
114.	Faritec Holdings Limited
115.	Ferrum Crescent Limited
116.	Firestone Energy Limited
117.	First Uranium Corporation
118.	Firststrand Limited
119.	Forbes & Manhattan Coal Corp
120.	Fortress Income Fund Limited
121.	Fountainhead Property Trust
122.	Gijima Group Limited
123.	Gold Fields Limited
124.	Gold One International Limited
125.	Goliath Gold Mining Limited
126.	Grand Parade Investments Limited
127.	Great Basin Gold Limited
128.	Grindrod Limited
129.	Group Five Limited
130.	Growthpoint Properties Limited
131.	Harmony Gold Mining Company Limited
132.	Holdsport Limited
133.	Hosken Consolidated Investments Ltd
134.	Hospitality Property Fund Limited
135.	Howden Africa Holdings Limited

136.	Hudaco Industries Limited
137.	Hulamin Limited
138.	Hwange Colliery Company Limited
139.	Hyprop Investments Limited
140.	Ifa Hotels And Resorts Limited
141.	Iliad Africa Limited
142.	Illovo Sugar Limited
143.	Impala Platinum Holdings Limited
144.	Imperial Holdings Limited
145.	Infrasors Holdings Limited
146.	Ingenuity Property Investments Ltd
147.	Insimbi Refractory & Alloy Sup Ltd
148.	Intu Properties Plc
149.	Investec Bank Limited
150.	Investec Bank Limited
151.	Investec Bank Ltd
152.	Investec Limited
153.	Investec Plc
154.	Investec Property Fund Limited
155.	Invicta Holdings Limited
156.	Italtile Limited
157.	Jasco Electronics Holdings Limited
158.	JCI Group
159.	JD Group Limited
160.	JSE Limited
161.	Jubilee Platinum Plc
162.	Kagiso Media Limited
163.	Kap Industrial Holdings Limited
164.	Kaydav Group Limited
165.	Keaton Energy Holdings Limited
166.	Kelly Group Limited
167.	Kibo Mining Plc
168.	Kumba Iron Ore Limited
169.	Lewis Group Limited
170.	Liberty Holdings Limited
171.	Life Healthcare Group Holdings Ltd
172.	Litha Healthcare Group Limited
173.	London Finance and Invest. Grp Plc
174.	Lonmin Plc
175.	M & S Holdings Limited
176.	Marshall Monteagle Plc
177.	Masonite (Africa) Limited
178.	Massmart Holdings Limited
179.	Master drilling Group Limited
180.	Mazor Group Limited

181.	Mediclinic International Limited
182.	Merafe Resources Limited
183.	Metair Investments Limited
184.	Metmar Limited
185.	Metrofile Holdings Limited
186.	Micromega Holdings Limited
187.	Miranda Mineral Holdings Limited
188.	Mix Telematics Limited
189.	Mmi Holdings Limited
190.	Mmi Holdings Limited
191.	Mobile Industries Limited
192.	Mondi Limited
193.	Mondi Plc
194.	Morvest Business Group Limited
195.	Mpact Limited
196.	Mr Price Group Limited
197.	MTN Group Limited
198.	Murray & Roberts Holdings Limited
199.	Mustek Limited
200.	Muvoni Technology Group Ltd
201.	Mvelaserve Limited Limited
202.	Nampak Limited
203.	Naspers Limited
204.	Nedbank Group Limited
205.	Net 1 Ueps Technologies Inc
206.	Netcare Limited
207.	New Europe Property Investments Plc
208.	Nictus Beperk
209.	Niveus Investments Ltd
210.	Northam Platinum Limited
211.	Nu-World Holdings Limited
212.	Oando Plc
213.	Oceana Group Limited
214.	Octodec Investments Limited
215.	Old Mutual Plc
216.	Omnia Holdings Limited
217.	Onelogix Group Limited
218.	Orion Real Estate Limited
219.	Osiris Prop International Co Ltd
220.	Palabora Mining Company Limited
221.	Pallinghurst Resources Limited
222.	Pamodzi Gold Limited
223.	Pan African Resources Plc
224.	Peregrine Holdings Limited
225.	Petmin Limited

226.	Phumelela Gaming & Leisure Limited
227.	Pick 'n Pay Holdings Limited
228.	Pick 'n Pay Stores Limited
229.	Pinnacle Technology Holdings Limited
230.	Pioneer Food Group Limited
231.	Platfields Limited
232.	PPC Limited
233.	Premium Properties Limited
234.	Prescient Limited
235.	Primeserv Group Limited
236.	Protech Khuthele Holdings Limited
237.	PSG Group Limited
238.	Purple Capital Limited
239.	Putprop Limited
240.	Rand Merchant Insurance Holdings Limited
241.	Randgold & Exploration Company Limited
242.	Raubex Group Limited
243.	Rba Holdings Limited
244.	RCL Foods Limited
245.	Rebosis Property Fund Limited
246.	Recm And Calibre Limited
247.	Redefine Prop International Limited
248.	Reinet Investments S.C.A
249.	Remgro Limited
250.	Resilient Property Income Fund Ltd
251.	Resource Generation Limited
252.	Reunert Limited
253.	Rex Trueform Clothing Company Limited
254.	RMB Holdings Limited
255.	Rockwell Diamonds Incorporated
256.	Rolfes Holdings Limited
257.	Royal Bafokeng Platinum Limited
258.	Sa Corporate Real Estate Fund
259.	Sable Holdings Limited
260.	Sable Platinum Limited
261.	SABmiller Plc
262.	Sabvest Limited
263.	Sacoil Holdings Limited
264.	Sanlam Limited
265.	Santam Limited
266.	Santova Limited
267.	Sanyati Holdings Limited
268.	Sappi Limited
269.	Sasfin Holdings Limited
270.	Sasol Limited

271.	Sea Kay Holdings Limited
272.	Sear del Investment Corporation Limited
273.	Securedata Holdings Limited
274.	Sekunjalo Investments Limited
275.	Sentula Mining Limited
276.	Sephaku Holdings Limited
277.	Shoprite Holdings Limited
278.	Shoprite Investments Limited
279.	Sibanye <u>Gold</u> Limited
280.	Silverbridge Holdings Limited
281.	South African Coal Mining Holdings Limited
282.	South Ocean Holdings Limited
283.	Sovereign Food Investments Limited
284.	Spanjaard Limited
285.	Spur Corporation Limited
286.	Square One Solutions Group Limited
287.	Standard Bank Group Limited
288.	Standard Bank Of South Africa Ltd
289.	Stefanutti Stocks Holdings Ltd
290.	Steinhoff International Holdings Ltd
291.	Stratcorp Limited
292.	Sun International Limited
293.	Super Group Limited
294.	Sycom Property Fund
295.	Synergy Income Fund Limited
296.	Taste Holdings Limited
297.	Tawana Resources NI
298.	Telkom Sa Soc Limited
299.	Thabex Limited
300.	The Bidvest Group Limited
301.	The Don Group Limited
302.	The Foschini Group Limited
303.	The Spar Group Limited
304.	Tiger Brands Limited
305.	Times Media Group Limited
306.	Tongaat Hulett Limited
307.	Tower Property Fund Limited
308.	Tradehold Limited
309.	Trans Hex Group Limited
310.	Transaction Capital Limited
311.	Transpaco Limited
312.	Trematon Capital Investments Ltd
313.	Trencor Limited
314.	Trustco Group Holdings Limited
315.	Truworths International Limited

316.	Tsogo Sun Holdings Limited
317.	Ububele Holdings Limited
318.	Uranium One Inc
319.	Value Group Limited
320.	Verimark Holdings Limited
321.	Village Main Reef Limited
322.	Vividend Income Fund Limited
323.	Vodacom Group Limited
324.	Vukile Property Fund Limited
325.	Vunani Property Investment Fund Ltd
326.	Wescoal Holdings Limited
327.	Wesizwe Platinum Limited
328.	Wilderness Holdings Limited
329.	Wilson Bayly Holmes-Ovcon Limited
330.	Winhold Limited
331.	Witwatersrand Cons Gold Resources
332.	Woolworths Holdings Limited
333.	York Timber Holdings Limited
334.	Zci Limited
335.	Zeder Investments Limited
336.	Zurich Insurance Company S A Ltd

ADDENDUM B: LIST OF SRI INDEX COMPANIES

1. ABSA Group
2. AdvTech Limited
3. AECI Limited
4. African Bank Investments Limited
5. African Oxygen Limited
6. African Rainbow Minerals Limited
7. Allied Electronics Corporation Limited
8. Allied Technologies Limited
9. Anglo American plc
10. Anglo American Platinum Limited
11. AngloGold Ashanti
12. Arcelormittal South Africa
13. Aspen Pharmacare Holdings Limited
14. Aveng Limited
15. Barloworld Limited
16. BHP Billiton
17. The Bidvest Group Limited
18. British American Tobacco
19. Business Connection Group
20. Capital Shopping Centres Group plc
21. Clicks Group limited
22. Discovery Holdings Limited
23. DRDGOLD Limited
24. Exxaro Resources
25. Firstrand Limited
26. The Foschini Group Limited
27. Gold Fields Limited
28. Grindrod
29. Group Five
30. Growthpoint Properties
31. Harmony Gold Mining Company Limited
32. Hulammin Deleted on Monday 24 December 2012
33. Illovo Sugar Limited
34. Impala Platinum Holdings
35. Imperial Holdings Ltd
36. Investec Ltd and PLC
37. JSE Limited
38. Kumba Iron Ore
39. Lewis Group Ltd
40. Liberty Holdings Limited

41. Lonmin plc
42. Massmart Holdings Limited
43. Merafe Resources
44. Medi-Clinic International Limited
45. MMI Holdings Ltd
46. Mondi (Ltd and Plc)
47. MTN Group Limited
48. Murray and Roberts
49. Nampak
50. Nedbank Limited
51. Netcare Limited
52. Northam Platinum Limited
53. Oceana Group Limited
54. Old Mutual
55. Palabora Mining Company Limited
56. Pick 'n Pay Retailers (Pty) Ltd
57. PPC Limited
58. Rainbow chicken Limited
59. Redefine Properties
60. Remgro Limited
61. RMB Holdings
62. Royal Bafokeng Platinum Limited
63. SABMiller plc
64. Sanlam
65. Santam
66. Sappi Limited
67. Sasol
68. Standard Bank Group
69. Steinhoff International
70. Sun International Ltd
71. Telkom SA Limited
72. Tiger Brands Limited
73. Tongaat Hulett
74. Truworths International Limited
75. Vodacom Group Limited
76. Wilson Bayly Holmes-Ovcon Limited
77. Woolworths Holdings International

ADDENDUM C: PROOF OF LANGUAGE EDITING

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Declaration

This is to declare that I, Annette L Combrink, accredited translator/language editor of the South African Translators' Institute, have edited the study by

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The influence of compliance with environmental accounting principles on the share price of listed companies


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Date: 14 December 2013