

**Financial Management, Corporate Governance and  
Risk Management:  
A Feminist Perspective Using an Optimisation Approach**

**DESI ADHARIANI**

**Master of Science in Management (Universitas Indonesia)**

**Bachelor of Accounting (Universitas Indonesia)**

**A thesis submitted in total fulfilment of the requirements  
for the degree of**

***Doctor of Philosophy***

**College of Business  
Victoria University, Melbourne  
February 2015**

## ABSTRACT

In recent years, the issue of effective corporate governance has attracted much attention, especially to promote an ethical business environment to ensure corporate accountability and integrity. In the academic sphere, the mainstream research on corporate governance and ethics has been performed using various ethics theories based on the premise of conflict of interest. This thesis uses a feminist perspective to analyse the corporate governance practices at BHP Billiton using the lens of the feminist ethics of care, as well as projecting the financial condition of the company using the same principles.

The research questions and propositions of this thesis are as follows:

1. *Research question:* What are the existing corporate governance practices applied in a sample company from the feminist ethics of care perspective?

*Proposition:* The application of the feminist ethics of care will result in a stakeholder model of corporate governance that places more emphasis on women's interests and maintaining good relationships with the stakeholders.

2. *Research question:* After examining the existing corporate governance practices, how will the financial condition of the company be affected if the feminist ethics of care is applied?

*Proposition:* It is projected that the financial condition will be stable, as the company will put more effort into balancing stakeholder interests while addressing social and environmental risk.

The two research questions were answered using mixed methods. For the first question, the analysis of corporate governance practices from the feminist ethics of care perspective was performed using qualitative content analysis of the annual and sustainability reports of BHP Billiton Limited, as the selected sample company for this study, for the period 2006 to 2011. Following the analysis, a financial planning model for the period 2012-2016 was designed using the quantitative optimisation method to answer the second question.

The original principles of the ethics of care, as developed by Gilligan (1982), are as follows:

1. The care approach is achieved through perception of one's self as connected to others. This is translated further as the feminist stakeholder theory.
2. Moral dilemmas are contextual.
3. Dilemmas are solved through inductive thinking.
4. The moral development through stages is sequential and hierarchical.
5. Principle of moral responsibility is reflected in the voices of women.
6. The ethics of care is distinguished by an emphasis on attachments, issues of self-sacrifice and selflessness and consideration of relationships as primary.

This thesis added two more principles based on the interpretation of the illumination of the ethics of care to the corporate governance practices as follows:

7. The nature of the corporate social responsibility (CSR) activities should be voluntary or discretionary.
8. Women's interests in various stakeholder groups are acknowledged.

The results based on the qualitative content analysis showed that BHP Billiton has not consistently applied principles suggested by the ethics of care. The principle relating to the perception of one's self as connected to others was represented in intensive stakeholder engagement programs and various voluntary CSR programs. The Company also acknowledged women's interests in the employee group and other stakeholder groups by applying gender diversity and gender equality principles. However, the caring approaches through communications, contextual and inductive problem solutions, and sequential and hierarchical moral development were not consistent with the ethics of care. Therefore, the first proposition was not fully supported by the research findings from the qualitative content analysis.

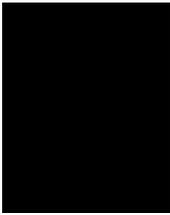
The projection of the financial condition for the five-year period of 2012-2016 showed that BHP Billiton could achieve an overall positive economic value retained even though negative results exist for 2015 and 2016. Sensitivity analysis was performed by providing two scenarios to show the impact of each on the projected financial condition.

It was concluded that the Company's financial condition would be stable in the future, which supports the second proposition.

Although not all propositions were supported in this study, the use of the ethics of care as a lens to support corporate governance practices and as guidance in financial projection has not been conducted in previous studies. This study therefore offers an original contribution to the literature of corporate governance, business ethics and financial planning.

## DECLARATION

“I, Desi Adhariani, declare that the PhD thesis entitled “*Financial Management, Corporate Governance and Risk Management: A Feminist Perspective Using an Optimisation Approach*” is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work”.



Desi Adhariani

Date 25 February 2015

## ACKNOWLEDGEMENTS

First of all, praise to Allah The Almighty who gave me the strength, patience and ability to complete this research.

This thesis would not have been possible without the support of many people who have given support and made valuable contributions. I would like to express my sincere thanks to my supervisors, Associate Professor Nick Sciulli and Professor Bob Clift for their dedication, direction and encouragement in helping me to complete this research. I have learned so much through the process.

I am also thankful to Professor Sardar Islam, Dr Jeffrey Faux and Dr Hassan Tanha for their supportive comments during various stages of this research.

My gratitude goes to the Australia Leadership Award-Ausaid as my scholarship sponsor, providing me the chance to study in Australia and giving support for me to present in several conferences throughout my study.

Many thanks to the staff at Victoria University who have assisted me in all administrative matters, especially to Tina Jeggo, Margaret Jones and the staff of the Graduate Research Centre.

Also many thanks to all of my friends who have given me sincere support and beautiful friendships. Special thanks to my family who have accompanied me to study in Australia. My deepest love and gratitude goes to my husband, Haris Badillah, who has provided never-ending support and love which made it possible for me to go through the ups and downs of my PhD journey. Also to my lovely sons and daughter, Abdul Aziz Sihkananda, Rayhan Firtra Qowiynanda, and Aishadinda Qaulan Maisura, who have completed my life and become my inspiration to complete this thesis.

I am also grateful for the continual support and encouragement from my parents, parents in law and brothers and sisters. I have been blessed to have such a wonderful family.

## LIST OF PUBLICATIONS

Future publications are expected from research papers presented in several conferences, as follows. Some conference proceedings have been published on the conference websites, as indicated. Presentations resulted in a variety of feedback, providing significant contributions to this thesis.

1. Research Proposal: Financial Management, Corporate Governance and Risk Management: A Feminist Perspective using An Optimisation Approach, presented at the *La Trobe Finance Conference and Doctoral Colloquium*, 2011, Melbourne.
2. Research Paper: Corporate Governance and The Feminist Ethics of Care: A Qualitative Study, presented at the *International Conference in Critical Accounting*, April 2012, New York, USA.
3. Research Paper: Corporate Governance from a Feminist Perspective: A Case study using the Quantitative Optimisation Approach, presented at the *Operational Research Society Conference*, December 2012, Wellington, New Zealand. The conference proceedings are available at:  
[https://secure.orsnz.org.nz/.../ORSNZ12\\_conference\\_proceedings.pdf](https://secure.orsnz.org.nz/.../ORSNZ12_conference_proceedings.pdf)
4. Research Paper: Financial Planning: A Feminist Perspective using an Optimisation Approach, accepted and received reviewers' comments but not presented at the Research Forum at the 35<sup>th</sup> *Annual Congress of the European Accounting Association* from 9-11 May 2012 in Ljubljana, Slovenia.
5. Research Paper: Everything is fine and Gonna be Just Fine: A Case Study on Corporate Governance Practices from a Feminist Perspective, presented at the *RMIT Sustainability Conference*, April 2013, Melbourne. The conference proceedings are available at [mams.rmit.edu.au/4ihi66kheay7.pdf](https://mams.rmit.edu.au/4ihi66kheay7.pdf)

## TABLE OF CONTENTS

<b>ABSTRACT</b>	<b>II</b>
<b>DECLARATION</b>	<b>V</b>
<b>ACKNOWLEDGEMENTS</b>	<b>VI</b>
<b>LIST OF PUBLICATIONS</b>	<b>VII</b>
<b>TABLE OF CONTENTS</b>	<b>VIII</b>
<b>LIST OF FIGURES</b>	<b>X</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
1.1 Research background	1
1.2 Limitations in the current literature and rationale for the research	4
1.3 Research aims	5
1.4 Introduction to the context of the research	6
1.5 Contribution to knowledge (academic contribution)	10
1.6 Statement of significance (practical contribution)	10
1.7 Research methodology	11
1.8 Structure of the thesis	13
<b>CHAPTER 2 AN INTRODUCTION TO THE ETHICS OF CARE</b>	<b>14</b>
2.1 Introduction	14
2.2 Research paradigm, ontology and epistemology	18
2.3 The ethics of care as the underpinning perspective	21
<b>CHAPTER 3 CORPORATE GOVERNANCE PRACTICES FROM THE ETHICS OF CARE PERSPECTIVE</b>	<b>36</b>
3.1 The ethics of care and corporate governance aspects	36
3.2 The ethics of care and sustainability activities, accounting and reporting	49
3.3 Inferences	58
3.4 Previous research using the content analysis method	58
3.5 Conceptual framework, research questions, and propositions	61
<b>CHAPTER 4 RESEARCH METHODOLOGY</b>	<b>64</b>
4.1 Introduction: feminist research	64
4.2 Qualitative analysis	65
4.3 Quantitative optimisation method	81
4.4 Research design	88
<b>CHAPTER 5 QUALITATIVE CONTENT ANALYSIS RESULTS AND DISCUSSION</b>	<b>93</b>
5.1 A brief description of BHP Billiton	93
5.2 Results and discussions from the qualitative content analysis	95

5.3	Summary of the results	166
5.4	Reliability and validity of the results	167
<b>CHAPTER 6 QUANTITATIVE OPTIMISATION MODEL, RESULTS AND DISCUSSION</b>		<b>169</b>
6.1	Objective function of the linear programming (optimisation) model	171
6.2	Decision Variables	174
6.3	Constraints functions of the linear programming (optimisation) model	175
6.4	Data Inputs	195
6.5	Using the data inputs in the Linear Programming (Optimisation) Model	198
6.6	Analysis of results	223
6.7	Sensitivity analysis	225
6.8	Comparison of projected and actual data for the years 2012 and 2013	232
6.9	Summary	235
<b>CHAPTER 7 CONCLUSION</b>		<b>237</b>
7.1	Introduction	237
7.2	Corporate governance practices from the ethics of care perspective	239
7.3	Major findings and results from the qualitative content analysis	240
7.4	Major findings and results from the quantitative optimisation model	243
7.5	Implications	244
7.6	Research limitations	246
<b>GLOSSARY</b>		<b>249</b>
<b>REFERENCES</b>		<b>251</b>
<b>APPENDIX 1 SOLUTION OF THE LINEAR PROGRAMMING MODEL USING THE PREMIUM SOLVER EXCEL</b>		<b>265</b>
<b>APPENDIX 2 SENSITIVITY ANALYSIS</b>		<b>276</b>
<b>APPENDIX 3 SENSITIVITY ANALYSIS FOR SCENARIO 1: INCREASE THE REVENUES</b>		<b>284</b>
<b>APPENDIX 4 SENSITIVITY ANALYSIS FOR SCENARIO 2: DECREASE CERTAIN EXPENSES</b>		<b>288</b>
<b>APPENDIX 5 EXTRACT DATA FOR CONTENT ANALYSIS FOR 2011</b>		<b>292</b>

## LIST OF FIGURES

Figure 1.1 The theoretical constructs framework.....	9
Figure 2.1 The content and organisation of the literature review chapter.....	17
Figure 3.1 The structure of corporate governance .....	39
Figure 3.2 A feminist governance model .....	40
Figure 3.3 Conceptual framework.....	62
Figure 4.1 Qualitative content analysis .....	68
Figure 4.2 ‘Zigzag’ approach in the qualitative content analysis.....	71
Figure 5.1 BHP Billiton governance structure .....	105
Figure 5.2 A metaphor of natural diamond structure .....	114
Figure 5.3 Percentages of female executives and staff .....	151

## List of Tables

Table 2.1 Features of positive and phenomenological paradigms.....	18
Table 2.2 Comparison of the ethics of care and the ethics of rights .....	23
Table 2.3 Different concepts of autonomy and independence.....	24
Table 2.4 A summary of feminist thinking .....	32
Table 3.1 Stakeholders' interests .....	41
Table 3.2 Masculine vs. feminine metaphors in the stakeholder concept .....	42
Table 3.3 Research questions and propositions.....	63
Table 4.1 Qualitative content analysis protocol.....	73
Table 4.2 Carleton's linear programming model .....	84
Table 4.3 Decision variables and list of parameters.....	85
Table 5.1 The stakeholder engagement method.....	97
Table 5.2 Employee turnover rate 2006-2011.....	103
Table 5.3 The number of community complaints and environmental spending .....	104
Table 5.4 The frequency of meetings.....	107
Table 5.5 Zero Harm goals at BHP Billiton.....	108
Table 5.6 Profit and the economic contribution (in US\$ Million) .....	115
Table 5.7 BHP Billiton's general corporate strategy statements 2006-2011 .....	124
Table 5.8 BHP Billiton's specific strategies statements 2006-2011 .....	126
Table 5.9 Moral development comparison.....	139
Table 5.10 Several statements in reports regarding the Olympic Dam mine and expansion ....	145
Table 5.11 Excerpt from BHP Billiton 2006 Sustainability Report regarding women as stakeholders in the consumer group .....	162
Table 5.12 Gendered appearances in 2006-2011 Reports (in terms of number of pictures).....	164
Table 5.13 Number of pages comparison.....	165
Table 6.1 Quantitative Optimisation Model for Financial Planning based on the Ethics of Care Principles of Corporate Governance .....	189
Table 6.2 The derivation from the ethics of care principles and accounting limitations to the Optimisation Model.....	193
Table 6.3 Key data inputs of BHP Billiton (consolidated), for the year 2006-2011 (in US\$ million, otherwise stated) .....	195
Table 6.4 Selected ratios .....	197
Table 6.5 Revenues (net sales revenue plus other income) projection.....	198
Table 6.6 EBIT projection (in US\$ million) .....	199

Table 6.7 Assets projection (in US\$ million).....	200
Table 6.8 Selected excerpts to determine the SROI.....	201
Table 6.9 Current assets and current liabilities projection (in US\$ million).....	209
Table 6.10 Estimation of BHP Billiton’s environmental costs .....	211
Table 6.11 Operating expenses projection (in US\$ Million) .....	215
Table 6.12 The amount of actual or potential litigation (in US\$ Million) .....	216
Table 6.13 The estimation of the costs of turnover .....	221
Table 6.14 The expenditures for women empowerment program in community group (US\$)	222
Table 6.15 BHP Billiton’s Pro forma financial data (in US\$ Million) and key ratios .....	223
Table 6.16 BHP Billiton’s pro forma financial data (in US\$ million) for Scenario 1: increase the revenues.....	226
Table 6.17 BHP Billiton’s pro forma financial data (in US\$ Million) for Scenario 2: decrease certain expenses.....	230
Table 6.18 Comparison of projected and actual data of BHP Billiton.....	232

## CHAPTER 1 INTRODUCTION

### 1.1 Research background

Corporate governance has emerged as an important issue within public companies. The term is used to describe the way a company is managed, monitored and held accountable. If governance is performed effectively, it can result in corporate accountability, reliability of public financial information, integrity and efficiency of the capital market. This can improve investor trust and confidence. Effective corporate governance is also expected to create an ethical business environment (Rezaee 2009).

Business ethics as the moral principles and ethical professional standards that guide business behaviour are the backbone of effective corporate governance, establishing the moral structure for the entire organisation (Rezaee 2009). The top level of management must set the appropriate tone to promote ethical conduct. Ethics in the workplace has received significant attention in corporate governance reforms following several reported cases of financial fraud (such as One Tel in Australia; Parmalat in Italy; Enron, Worldcom, Xerox in the United States (US); and Satyam Computer Services in India).

Several ethics' theories can be used as the underpinning theory for corporate governance practices. The focus of this thesis is on the feminist ethics of care, which emphasises the self as connected to others, especially the care-giver's responsibility to the other to maintain that connection (Gilligan 1982). The concept of care ethics is often compared with the masculine ethics of justice (or sometimes referred to as the ethics of rights), which defines the self as separate and uses rights to protect boundaries between the self and others. Feminine thinking is represented as a web of relationships and responsibilities, compared to masculine thinking, which is represented by the use of hierarchy (Liedtka 2009). Since its conceptualisation in 1982 by Carol Gilligan, the theory of ethics of care has instigated many care-related publications within the philosophy field. However, little attention has been devoted to it within the business ethics' literature, despite the fact that it has relevance to business as a relationship-based ethic and powerful linkages with stakeholder theory (Wicks 1996).

Just like the ethics of care, the stakeholder theory recognises the notion of interdependence, as noted by Wicks, Gilbert and Freeman (1994):

The corporation is constituted by the network of relationships which it is involved in with employees, customers, suppliers, communities, business and other groups who interact with and give meaning and definition to the corporation. (p. 12)

Interdependence, according to stakeholder theory, is between groups, while the ethics of care is between and among the individuals who comprise those groups. Despite these differences, both theories view business as a web of ongoing connections and an ethic of justice is needed as a complement to both theories to handle competing claims and inadequate resources. The ethics of care theory also recognises the need for clear boundaries around each individuals' and each organisation's responsibility to care. The boundaries are necessary to avoid the feeling of overwhelming the care-giver (in this case the care-giver is the corporation) with responsibilities beyond the emotional, intellectual and physical capacity to care. The creation of trusted collaborative networks that represent the relationships suggested by the ethics of care is essential in supporting and extending the capacity to care (Liedtka 2009).

Many factors seem to drive organisations to care. These align closely with Gilligan's notions of ethics of care (1982). The focus on relationships and connectedness is central and is reflected, on a basic level, in the willingness to care for customers and nurture employees.

Considering the potential contributions that the theory may make to the business literature and practices, this thesis analyses the corporate governance practices from the feminist ethics of care point of view. As unethical business conduct can have financial consequences, this research also offers practical support for the application of care-based corporate governance in financial management and financial planning.

Companies all around the world require sound financial management strategies to support the achievement of their short and long-term objectives. Those strategies will guide a firm in the decision making of three major policies: investment, financing and

dividends. Theories and methodologies of financial management have been developed in these areas, acknowledging the interrelationships and simultaneous considerations of investment, financing and dividend options facing firms (Lee, Lee and Lee 2009, p. 668; Myers and Pogue 1974).

Good financial management is also essential to managing the divergence of interests between shareholders and managers as a consequence of the separation of ownership and control. This is posited in the classic work of Berle and Means (1932) and the agency theory of Jensen and Meckling (1976). A corporate governance concept was developed as a tool to manage conflicts of interest among parties, as an internal and external control mechanism in a firm. Good corporate governance is beneficial not only for shareholders but also for stakeholders, including investors, creditors, managers, employees and society as a whole. It resolves conflicts of interest, encourages controls and a sense of ethics, and improves transparency.

Financial management strategies developed within good governance principles will normatively guarantee the value maximisation and long-term performance of all companies. As these strategies are incorporated into a financial planning model in this thesis, an ethical corporate governance practice will result in reliable accounting data as the sources or input for the model. One important aspect of governance that should be exercised by companies is appropriate and effective risk management. This will minimise or help avoid the possibility of unexpected losses arising from financial, operating, or other risks. Risk management requires a company, through the board of directors, to develop a risk strategy and risk tolerance in making decisions under uncertain conditions in the future.

Promoting good governance in financial management is not only supported by theory, but also imposed or recommended by regulators, stock exchanges, and industrial groups. Rules and guidelines for good practices can be found in corporate and securities laws, bankruptcy procedures, corporate control practices, internal and external audit requirements, and stock market regulations. Each country has a slightly different set of

rules, but these rules share the same message: to enhance the performance and sustainability of all companies to benefit stakeholders.

Despite theories and regulations being developed and imposed in the field of financial management for use by companies seeking sustainability, company failures still occur. Blame is often placed on uncertain conditions, such as an economic crisis. In fact, in some cases, company failures can lead to economic or financial crisis. No country is immune from such crises and once they occurred, the costs of resolving them are often very high (Hunter 2002). It is also inappropriate to point the finger at the inadequacy of existing regulations, even though we frequently see a new regulation being endorsed following corporate failures to strengthen the economies and recover investors' confidence (e.g. the Enron and Worldcom case that led to the Sarbanes Oxley Act).

## **1.2 Limitations in the current literature and rationale for the research**

There are at least three reasons for company failure in relation to financial management issues (Banks 2004): failure in corporate governance processes underpinning financial management strategies, including unclear corporate strategies, liberal accounting policies, and inadequate internal audits; inadequate risk management leading to excessive risk-taking; and the unethical behaviour of directors, executives, managers and employees.

However, while these three factors have been widely investigated, they have not been examined from the feminist ethical perspective adopted in this study. As mentioned previously, this research applies the ethics of care from a feminist perspective in the belief that the financial aspect of a company should be managed by exercising a more caring approach – which is an ethics of care point of view -- rather than focusing only on formal rules and contracts. This kind of ethics could breathe life into formal rules and become an integrative and essential aspect of company financial management strategies.

The ethics of care theory has been used in prior finance, accounting and auditing research, including the stakeholder interpretation (Burton and Dunn 1996; Wicks,

Gilbert and Freeman 1994), the audit firm rotation (Reiter 1997), corporate governance (Machold, Ahmed and Farquhar 2008), crisis management (Simola 2005) and the education of ethics to students (Reiter 1996). None of these prior studies, however, has applied the ethics of care to current corporate governance practices or examined its impact on the financial condition of a company. Addressing these gaps in the literature represents the original contribution of this thesis.

### **1.3 Research aims**

This study had two research aims. First, an analysis of the corporate governance practices using the feminist ethics of care perspective was undertaken in the hope that the illumination of feminist ethics will generate a more caring approach in business operations. The second aim was to design sound financial planning strategies that integrate good corporate governance and risk management principles using a feminist perspective.

As already indicated, the feminist theory applied was restricted to the ethics of care most closely associated with the research work of Gilligan (1982). She argued that in moral discourse, males seem to maintain autonomy-oriented traits and objectivity, and an adherence to universal principles (the ethics of rights), whereas females give responses more contextually (the ethics of care).

The ethics of care was selected for this research because masculinist ethical theories, which are reflected in the premise of conflicts of interest amongst competitive stakeholders, were not considered adequate to shape the corporate governance practices and financial planning strategies of a company. Indeed, perhaps the root cause of corporate collapses is the failure to apply feminist ethics within company financial management strategies. This inadequacy, which calls for a practical contribution and creates a knowledge gap, is explicated further in the literature review. However, for the purpose of explaining the aims of this project, it can be simply said that financial management strategies built on corporate governance and risk management principles within this ethical framework will engender a more caring approach in satisfying various stakeholders' interest in a company's sustainability in a long-term period.

This study aimed to address the knowledge gap by offering an integrative financial planning model using the feminist ethics of care perspective. More specifically, the objectives of this research were:

1. To examine the corporate governance model and practices based on the feminist ethical perspective.
2. To quantify the policy and mechanism of the caring corporate governance principles and identify the right proxy for them.
3. To develop an integrative optimisation model for sound financial management and/or planning strategies.
4. To simulate the model to obtain sound financial management strategies, using data from an Australian company.

#### **1.4 Introduction to the context of the research**

A large proportion of mainstream literature in accounting and finance conceptualises the conflict of interests between shareholders and managers, or what was firstly articulated by Jensen and Meckling (1976) as the agency problem. This is understood in terms of competing and conflicting claims, problem solving using rules and laws, and the rights and obligations measurement in legitimacy and power dimensions (Machold, Ahmed and Farquhar 2008). Implicitly or explicitly, we can see that the moral reasoning within this discourse is taken from a masculinist ethics of right view (Gilligan 1982). Under this perspective, the agency problem of conflicting interests among parties in a company can be reduced but cannot really be eradicated. The corporate collapses that occur repeatedly provide strong evidence to prove that solutions using rules, laws, and a power framework are just short-term remedies with no guarantee of long-term success.

The failure of governance using the ethics of rights perspective gave rise to some studies that sought to view governance from the feminist ethics of care perspective. While the rights perspective emphasises the rules and respect for the rights of others, the care point of view stresses the responsibility, relationship, concern, care, continued attachment, sacrifice, and the avoidance of hurting another (Reiter 1997).

A different moral emphasis could be traced back to gender stereotypes. However, it is argued that ‘the difference between masculinist and feminist perspectives is not exclusively and sharply defined along sexual lines’ (Machold, Ahmed and Farquhar 2008, p. 668). A feminine firm is identified by Dobson and White (1995) as an organisation in which the connected self is the predominant moral orientation. It does not necessarily mean that the firm is owned or managed by women. With this idea, we can envisage that a feminine firm, which values connectedness and relationships in its vision and mission, can generate the bonds of trust from its stakeholders and, hence, overcome the inefficiencies of its masculine counterpart. The point of interest is the moral orientation of the firm instead of the actual gender of the agents therein.

Within the ethics of care framework we can then formulate sound financial management strategies to project the future financial condition that will enhance the long-term performance and sustainability of a company. The corporate governance aspect, as one of the essential elements proposed in this research to develop those strategies, must also be shaped using the feminist ethics. One model is proposed by Machold, Ahmed and Farquhar (2008, p. 673), who view a firm as a web of relationships rather than a nexus of contracts. This model is postulated by principal-agent and multilateral contractarian stakeholder theorists.

The use of ethics of care as a moral grounding for corporate governance brings several consequences. First, the objective of the firm is not only to maximise value for shareholders but also to take into consideration other stakeholders, even those who do not have a formal contract with the firm. Only after considering these other stakeholders, can a company be expected to exercise ethical behaviour, as failure to do so can result in harmful outcomes. Second, risk management as one of the pillars of good governance must be built under a risk prudence approach to avoid the temptation to make a large return without considering the risks. In the literature review chapter of this thesis, the risk management aspect based on the feminist ethics of care is interpreted as more closely aligned to the social and environmental risk management.

Care ethics place more emphasis on relationships, empathy, and compassion rather than an appeal to generalisable principles, not because such principles are deemed worthless but because exclusive focus on these principles will make people forget how to actually respond to ethical situations. This does not mean that rules, rights, principles, or consequences are not morally important, but it is simply that there is more to morality. Justice and care should be seen to exist in a dynamic and potentially harmonious relationship (Palmer and Stoll 2011).

The application of the ethics of care to the corporate governance concept is considered in line with the stakeholder aspect of corporate governance instead of the shareholder aspect. It will add social responsibility to the existing financial responsibilities. However, having corporate social responsibility (CSR) policies and programs alone does not guarantee value maximisation to a company if ethics are not connected to the value creation.

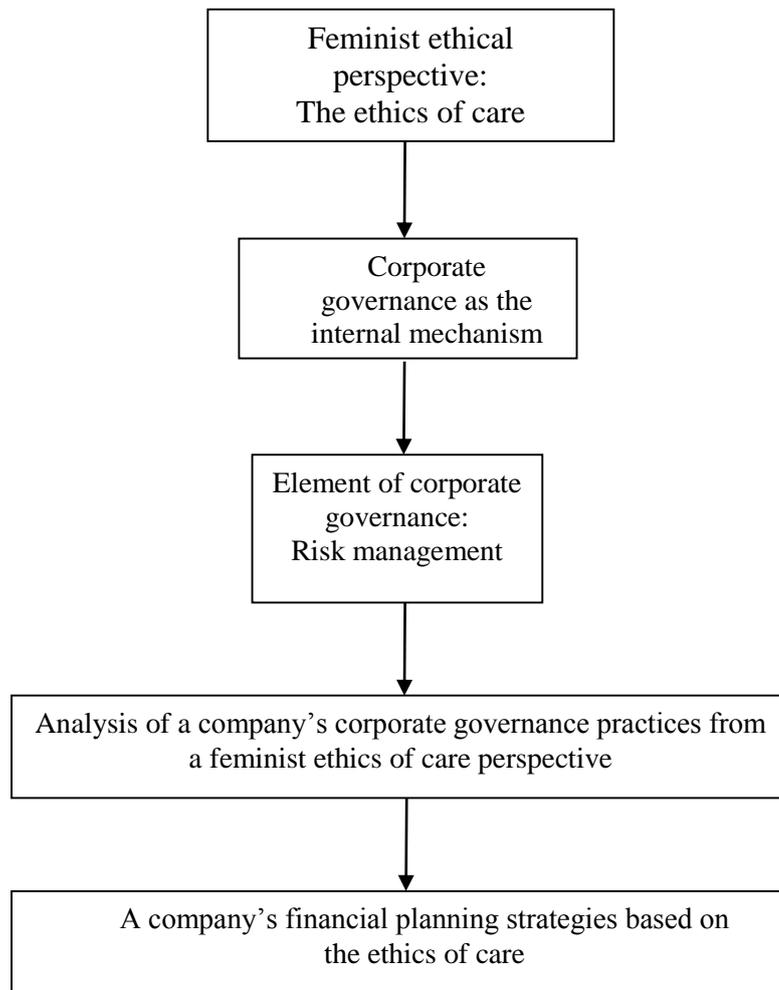
This research addresses these issues using an integrated optimisation model in developing the sound financial management strategies of a company. Simulation and adjustment to the model using a trial and error method was made until optimum value and good financial strategies were achieved. Before the model was developed, an analysis of the corporate governance practices from the ethics of care perspective was conducted to identify the financial planning strategies that should be incorporated into the model. More importantly, the analysis was performed to gain an understanding of the applicability of the ethics of care theory to corporate governance practices.

As the ethics of care concept comes from feminist theory, which is rooted in women's experiences, the derivation of the perspective to the corporate governance practices also supports women's interests. This has been advocated in previous research, such as the work conducted by Williams (2003) who studied the relationship between the proportion of women serving on boards of directors and their influence on corporate philanthropy. Using a sample of 185 Fortune 500 firms for 1991-1994, the research results strongly supported the influence. Firms having a higher proportion of women serving on the boards engage in greater charitable activities, representing a more caring

approach, although the underlying motives for women being more charitable than men remain unclear in the study. Having said that, this thesis does not create a boundary on the applicability of the results to companies that only have a high proportion of women in top positions. The results of the analysis of corporate governance practices from the feminist perspective and the financial planning model are expected to be applicable to other companies.

Based on the above discussion, the theoretical constructs framework is depicted in Figure 1.1 below.

**Figure 1.1 The theoretical constructs framework**



### **1.5 Contribution to knowledge (academic contribution)**

The research literature on corporate governance and ethics has been explored in several previous studies (Mason and Simmons 2014; Roberts 2001; Veasey 2003) but only a small amount of research has studied corporate governance from a feminist ethics of care perspective (Machold, Ahmed and Farquhar 2008). This thesis contributes to knowledge by offering a different lens through which to study corporate governance, highlighting the potential that an ethics of care perspective may bring in illuminating more caring corporate practice.

There is also a knowledge gap in the financial planning model literature. The literature on the long-term financial analysis and planning of a firm has emerged using various methods for investigating this issue (Lee, Lee and Lee 2009). These methods are optimisation methods, such as the linear programming method (Carleton 1970; Carleton, Dick and Downes 1973; Ijiri, Levy and Lyon 1963); goal programming (Batson 1989; Kvanli 1980); stochastic programming (Cariño and Ziemba 1998; Mulvey and Shetty 2004); and the simultaneous equation model (Francis and Rowell 1978; Warren and Shelton 1971). These works, however, are quite out-dated, as they have not incorporated the current corporate governance principles and regulatory environments. In addition, their methods are built within the classic agency theory framework, which is claimed to be a very masculinist view of accounting theory.

This thesis uses the different perspective of a feminist theory and linear programming method to develop financial management corporate strategies. This perspective has not been used by other researchers in the financial management area. The multidisciplinary approach of this research fills the knowledge gap in the literature and acknowledges the importance of analysing certain problems from various points of view.

### **1.6 Statement of significance (practical contribution)**

This study will be significant for corporate policy decision making in the following aspects:

1. The analysis of corporate governance practices from a feminist perspective can guide a company to behave ethically according to the ethics of care, in addition to merely following the rules as suggested by the ethics of justice.
2. The feminist ethics perspective adopted in the corporate governance practices can assist a company in maintaining connections and relationships with stakeholders and in finding solutions to problems it may face with various stakeholders.
3. Integrative and well-designed financial strategies will equip management with a better apparatus for achieving the advantages of good corporate governance and risk management principles, especially under conditions of uncertainty.
4. The inclusion of feminist ethics of care principles in the financial management model will ensure the ethical financial decisions made by a company are aimed at enhancing the value of the firm in the long-term and maintaining a good relationship with the company's stakeholders.
5. The methodology adopted in this project may be extended to other companies in similar or different industries/sectors and may serve as a basis for a new multidisciplinary approach to strategic financial management.

### **1.7 Research methodology**

As already outlined, the use of rules and respect for the rights of others in corporate governance practices, as suggested by the ethics of justice, should be complemented with the ethics of care, emphasising responsibility, relationships, concern and care towards other parties. Since research in corporate governance is rarely conducted using the feminist ethics of care framework, this study explored the potential of using this type of ethical approach to balance the ethics of justice perspective in corporate governance research.

A series of steps were taken in the methodology to achieve the purpose of the research. These were:

#### **a. Defining the feminist perspective**

As discussed, the feminist perspective adopted in this research is limited to the ethics of care concept. The principles of the feminist ethics of care are:

1. Achieved through perception of one's self as connected to others.
2. Moral dilemmas are contextual.
3. Dilemmas solved through inductive thinking.
4. Development through stages that are sequential and hierarchical.
5. Principle of moral responsibility is reflected in the voices of women.
6. Distinguished by an emphasis on attachments, issues of self-sacrifice and selfishness and consideration of relationships as primary.

**b. The extension of the ethics of care to corporate governance practices**

Based on the different concerns of the ethics of care, its derivation to corporate governance practices was developed. Building good relationships with other parties is interpreted as developing a good relationship with stakeholders, not merely to satisfy the shareholders. This thesis adds the environment as a stakeholder and hence, the social and environmental aspects should be managed according to the ethics of care principles.

**c. Selection of the sample**

One company was chosen to study the application of the feminist perspective in corporate governance practices, using its annual report, even though the company does not claim to apply the feminist perspective. BHP Billiton was selected as it is renowned in Australia as a large company with wide social and environmental responsibilities and has achieved the annual report award for its comprehensive and transparent annual and sustainability report.

**d. Selection of the method used for analysis**

The exploration of an applied feminist perspective was performed using content analysis (particularly from a qualitative perspective) for the period 2006-2011. This method was chosen as the annual reports were publicly available and represented the company's formal and written communication to its stakeholders.

#### **e. The projection of financial condition**

After the application of the feminist ethics of care was explored, a projection of the financial condition of the company was performed as a tool to describe how a company can use its resources while achieving the objective to satisfy the stakeholders. The projection was developed using the simple optimisation method (linear programming), which consists of objective and constraint functions.

### **1.8 Structure of the thesis**

This thesis is divided into seven chapters, outlined as follows:

Chapter 2 presents the research paradigm, the basic concept of the ethics of care, its difference from the ethics of justice and its position in the ethics and feminist literature.

Chapter 3 provides a literature review on corporate governance from the ethics of care perspective and the linkages between the two and sustainability activities, accounting and reporting.

Chapter 4 introduces the research methodologies adopted and the process involved in data collection, content analysis protocols and quantitative optimisation model building.

Chapter 5 presents the qualitative content analysis results and discusses any connections to the principles of the feminist ethics of care.

In Chapter 6, the quantitative optimisation model based on the ethics of care for financial planning is presented in detail, along with the data input from BHP Billiton as the sample. The original results, sensitivity analysis and comparison of projected and actual data are then provided.

Finally, conclusions by summarising the major findings, implications and limitations of this research are presented in Chapter 7.

## CHAPTER 2 AN INTRODUCTION TO THE ETHICS OF CARE

### 2.1 Introduction

Chapters 2 and 3 present a review of the literature relevant to this thesis. First, the research paradigm and the feminist ethics of care are studied and presented in Chapter 2. Second, an alternative approach to corporate governance using the ethics of care is discussed in Chapter 3.

Chapter 2 discusses the ethics of care and its position in business ethics and feminist literature. The literature reviewed in this chapter was selected on the basis of its relevance to the ethics of care. However, since the concept of ethics of care is relatively new, the extent of available literature in this area is still limited compared to the literature for other types of ethics.

A large proportion of mainstream literature in accounting and finance conceptualises the definition of a firm as a “nexus of contracts” with conflicts of interest among the contracting parties (Coase 1937). One of the conflicts of interest occurs between shareholders and managers, or what is articulated by Jensen and Meckling (1976) as the agency problem, in terms of competing and conflicting claims, problem solving using rules and laws, rights and obligations measurement in legitimacy and the power dimensions (Machold, Ahmed and Farquhar 2008). Implicitly or explicitly, according to Gilligan (1982), the moral reasoning within this discourse represents a masculinist view. Under this perspective, which is called the ethics of rights, the agency problem due to the conflicting interests among parties in a company can be reduced but not really eradicated at the roots. The corporate collapses that occur repeatedly are strong evidence that the mode of operating using rules, laws and a power framework are a short-term remedy without sufficient guarantee of long-term success in terms of the sustainability of a business. Research into Enron conducted by strategic management researchers at the State University of New York at Buffalo, provides one example of this conclusion. The researchers found that the existence of the agency problem among its managers and board of directors became a basis for the company's mis-management and unethical behaviour as they had incentives not to act in the best interest of

shareholders (Contrada 2002). The lack of adequate controls over the agency problem also provided a chance for management to abuse their powers and act unethically.

As pointed out by Yong (2009), good and effective governance that leads to ethical and proper conduct in all business aspects and transactions is a necessary condition to direct global economies out of the global financial crisis. At the micro level, it is needed to avoid corporate collapse. The failure of world-class companies such as Barings, Enron and Worldcom reflects the fundamental deficiency in the application of governance principles, such as promoting ethical and responsible decision making and safeguarding the integrity of financial reporting principles.

As indicated, the unexpected collapse of Enron in 2001 was associated with a lack of ethical behaviour among top management. The lack of ethical commitment, as reflected in the “abuse” of accounting practice, seems to have been serendipitously “supported” by US accounting standards - the US GAAP - pertinent to the consolidation of Special Purpose Entities (SPEs), which could be manipulated. This is highlighted by Clarke, Dean and Oliver (2003) as follows:

Enron, it is claimed, *bent* the applicable US GAAP group accounting rules. A well-publicised aspect of Enron’s operations was the use it made of those SPEs, allegedly to keep debt off the group consolidated balance sheet and to hide numerous losses. This was possible because US GAAP worked within an ownership criterion to determine which entities are subsidiaries and when their financials had to be consolidated. It was relatively easy for Enron to manipulate the ownership level of SPEs below the statutory 3 per cent benchmark (p.261).

The manipulation of the ownership level was possible as under GAAP rules at the time, Enron was not required to consolidate the SPEs with its financial statements if the independent third party(ies) had a controlling and “substantial” equity interest in the SPE, where “substantial” was defined as at least 3% of the SPEs’ assets.

The accounting fraud by exploiting the rules determined by accounting standards was justified ethically by Enron’s top executives as they “followed” the ethics of rights principles to make decisions based on applicable rules and laws. The loophole in accounting standards in regards to the consolidation of the SPEs was used without

considering its impact on the company and stakeholders, including the shareholders. Therefore, it can be argued that such company principles are based only on the ethics of rights perspectives and ignore the other types of ethics that could complement them.

The inadequacy of applying only the ethics of rights perspective has given rise to literature which views governance from the feminist ethics perspective of ethics of care. While the ethics of rights perspective emphasises the rules and respect for the rights of others, the ethics of care point of view stresses responsibilities, relationships, concern, care, continued attachment, sacrifice and avoidance of hurting others (Reiter 1997).

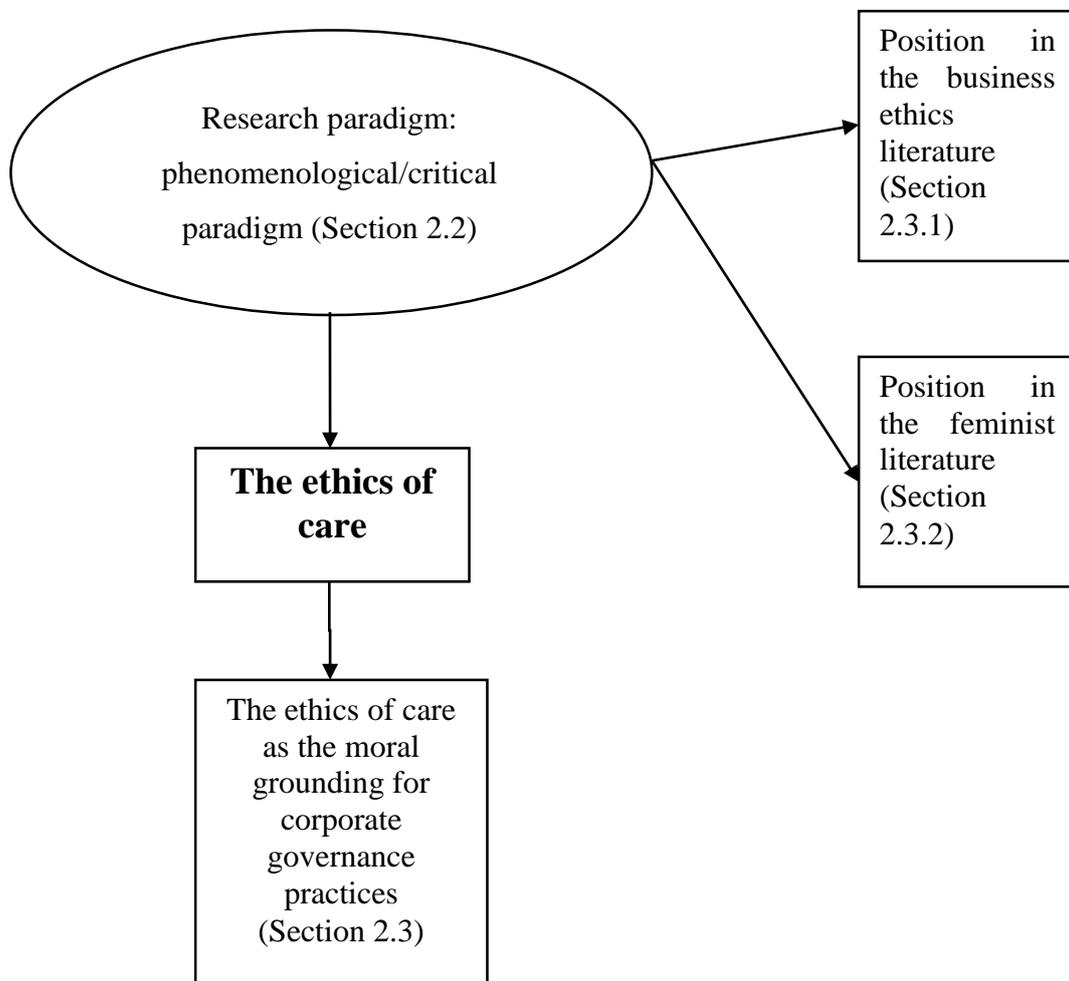
Traditionally, a different moral emphasis can be traced back to gender stereotypes. A study conducted by Bampton and Maclagan (2009) suggests that women are more inclined to follow the ethics of care than men do, which makes them react differently to business ethics issues. These conclusions were made after assessing 98 respondents' (moral) judgements using a questionnaire survey. The respondents were undergraduate accounting students in the United Kingdom (UK), with a sample of 66 males (67%) and 32 females (33%). The questionnaires contained five vignettes or scenarios that did not refer explicitly to moral or ethical issues in the wording or administration. These "invite a care orientation" vignettes were followed by a question asking respondents if they saw the action described as acceptable or otherwise. This approach allowed for variations in subjective meaning attached to the vignettes. Using a Chi Square ( $X^2$ ) test, the results suggest that at least where a care orientation was invited, women judged situations differently from the men. Moreover, the female respondents also seemed to have more concern for human welfare and protection of the environment.

Nevertheless, it is argued that 'the difference between masculinist and feminist perspectives is not exclusively and sharply defined along sexual lines' (Machold, Ahmed and Farquhar 2008, p. 668). Moreover, Velasquez (1998, p. 126) emphasises that 'caring is not the task of women, but a moral imperative for both men and women'. Within this context, a "feminist" firm does not mean one that is managed by women, but it values connectedness and relationships in its vision and mission and can generate bonds of trust with its stakeholders, overcoming the deficiencies of its masculine

counterpart. Machold, Ahmed and Farquhar (2008) and Velasquez (1998) made their statements (as above) in theoretical journal articles based on empirical research. These will be discussed further in the next section related to the ethics of care.

This thesis is aimed at viewing corporate governance practices from the feminist ethics of care perspective. The discussion begins with the research paradigm adopted in the thesis. The discussion of the ethics of care as the moral grounding for corporate governance practices is then presented as depicted in Figure 2.1.

**Figure 2.1 The content and organisation of the literature review chapter**



## 2.2 Research paradigm, ontology and epistemology

Research paradigms are different theoretical and methodological perspectives based on researchers' philosophies and assumptions about the world and the nature of knowledge (Blaikie 2007; Collis and Hussey 2003). Blaikie (2007) divided research paradigms into two classifications: classical and contemporary. The classical paradigms represent the earliest endeavours to identify whether the natural science methods can be applied to the social sciences or ought to be rejected. Positivism, critical rationalism, classical hermeneutics and interpretivism are categorised as classical paradigms. Critical theory, ethnomethodology, social realism, contemporary hermeneutics, structuration theory and feminism are categorised as contemporary research paradigms.

Collis and Hussey (2003) also provided two classifications of research paradigms: positive and phenomenological. The positivistic approach seeks the facts or causes of social phenomena while still maintaining the objective state of the individual; in contrast, the phenomenological paradigm (which can be viewed as the critical perspective in Blaikie's (2007) classification) is used to understand human behaviour from the participant's own frame of reference. The features of Collis and Hussey's two paradigms are shown in Table 2.1.

**Table 2.1 Features of positive and phenomenological paradigms**

<b>Features</b>	<b>Positivistic paradigm</b>	<b>Phenomenological paradigm</b>
<b>Ontological (the nature of reality)</b>	Reality is objective and singular, apart from the researcher	Reality is subjective and multiple as seen by participants in a study
<b>Epistemological (the relationship of the researcher to that researched)</b>	Researcher is independent from that being researched	Researcher interacts with that being researched
<b>Axiological (the role of values)</b>	Value-free and unbiased	Value-laden and biased
<b>Nature of data</b>	Tends to produce quantitative data that is highly specific and precise	Tends to produce qualitative data that is rich and subjective
<b>Sample size</b>	Uses large samples	Uses small samples
<b>Research concern</b>	Concerned with hypothesis testing	Concerned with generating theories
<b>Research location</b>	The location is artificial	The location is natural
<b>Reliability level</b>	High	Low

<b>Features</b>	<b>Positivistic paradigm</b>	<b>Phenomenological paradigm</b>
<b>Validity level</b>	Low	High
<b>Generalisation</b>	Generalises from sample to population	Generalises from one setting to another

Source: Adapted from Creswell (1994) in Collis and Hussey (2003) p. 49 and from Collis and Hussey (2003) p. 55.

According to Collis and Hussey (2003), the two paradigms represent two extremes in a continuum. Many variations of each research paradigm can occur in the continuum. It is not appropriate to label the positivist approach as a quantitative research method and the phenomenological approach as a qualitative research method, as the researchers argue, ‘It is possible for a positivistic paradigm to produce qualitative data and vice versa’ (Collis and Hussey 2003, p. 56).

This thesis falls into the phenomenological or critical theory paradigm that provides a “Yes and No” response to the question, “Can the methods of the natural sciences be used in the social sciences?” (Blaikie 2007, p. 134). The leading exponent of this paradigm, Jurgen Habermas (1987), suggested the ‘communicative experience’ to study certain subject matter in the social sciences as opposed to the ‘sense experience’ used in positivism. Nonetheless, critical theory does not completely reject all of the methods used in positivism, with its empirical-analytic science, on the grounds that several of the methods can also be applied to social life. As Roslender states, ‘In principle, there is no reason why adopting such a perspective precludes empirical work’ (2006, p. 265). Habermas (1987), however, does not favour this approach, believing that empirical insights cannot guarantee an in-depth and rich understanding of the issues being studied. In response to such criticism, Roslender (2006) suggests that empirical materials can still be used in a less systematic manner to provide general points and issues rather than detailed insights.

Critical theory goes beyond an explanation of “what exists today” to the normative “how it should be”. In this notion, critical theory does not have the pretence of being objective but, instead, appreciates the partiality not provided by other perspectives. It is intended as a complement to other perspectives, not a rejection of the current practice of

accounting, in order to construct the alternative insights for accounting research and practice.

The critical perspective also challenges the notion of accounting information objectivity by stating that the information cannot be deemed as value-free or neutral but value-laden because it is a “human-construct” discipline. More self-reflexive and contextualised accounting research should recognise the inter-relationships between society, accounting theory and practice and values that are inherent in people in a society. Moreover, Goldberg (1965) states that ‘the basis of accounting theory, as that of economic theory or legal theory, lies not only in the institutional framework of a particular society, but also in social philosophy’ (p.4).

The assumptions of the research paradigm lead to the research methodology (Collis and Hussey 2003). In this thesis the feminist perspective research methodology has been adopted as one of the approaches to social sciences under the phenomenological paradigm. According to Crotty (1998), several attempts have been made to identify women’s forms of research to differentiate them from male ones. One point of view identifies quantitative research as male and qualitative research as female. However, this is not widely accepted, as stated by Fonow and Cook (2009, p. 8):

... that carefully designed research grounded in feminist theory and ethics is more useful to understanding women’s experiences than an allegiance to any one particular method as more “feminist” than another. A well-crafted quantitative study may be more useful to policy makers and cause less harm to women than a poorly crafted qualitative one.

In line with the classification and explanation provided above, this research adopted the critical or phenomenological approach based on the following criteria:

1. The axiology applied in this research is value-laden and biased as accounting is socially constructed and, hence, cannot be taught as neutral or value-free. The value or belief adopted in this study is the feminist perspective which will use the experiences or nature of women in constructing a more ethical theory and practice of accounting and financial planning.

2. This project is not an empirical study to explain “what is” or “what happens” as commonly used in the positivistic approach. Rather, the “what ought” approach will be used to evaluate current practice and to offer a construction of ethical accounting and finance based on the feminist perspective.
3. Even though quantitative data will be used in conjunction with qualitative data, this research does not fall into the positivistic approach. As stated by Collis and Hussey (2003), it is possible within the positivistic approach to work with qualitative data and vice versa for the phenomenological/critical approach. The critical paradigm operates at the philosophical level in this study, leading to the technical level of methods, including the selection of the nature of the data. Mixed methods (quantitative and qualitative) are used to describe the possibility of the application of the constructed theory into practice.

The research methodology will be described further in Chapter 4.

### **2.3 The ethics of care as the underpinning perspective**

As one branch of social science, accounting cannot be treated as a value neutral science like its natural science counterparts. Indeed, there are behavioural aspects, human and social factors that should be considered. Hopwood (1974) gave some examples of this. For instance, in management accounting the use of the budget for performance measurement is related to the behaviour of management and staff in determining the goal to measure the performance. In financial accounting, the level of disclosures is also determined by social pressures and the willingness of a company to disclose certain information. The issues of gender also become relevant, especially in respect of ethics (Gaffikin 2008). The attention to the significance of this aspect was drawn from Gilligan’s 1982 work. Gilligan (1982) examined the contrasts between male and female voices to highlight the difference between two modes of thought and to focus on a problem of interpretation rather than to represent a generalisation about either sex.

Even though Gilligan’s *In Different Voice* (1982) discusses the mode of moral reasoning for girls and boys, it does not claim that the “different” voice of connected

self and of the ethics of care is exclusively a woman's voice. In other words, she does not describe a generalised split between women and men's moral thinking, as explained in this statement:

The different voice I describe is characterized not by gender but theme. Its association with women is an empirical observation and it is primarily through women's voices that I trace its development. But this association is not absolute, and the contrasts between male and female voices are presented here to highlight a distinction between two modes of thought and to focus a problem of interpretation rather than to represent a generalization about either sex (Gilligan 1982, p. 2)

Gilligan's work (1982) was a response to the observations made by developmental psychologist Kohlberg (1981) who found that women scored lower on the test of moral development. Gilligan argued that the result might be biased since Kohlberg's theory was developed using exclusively male samples; therefore, she introduced a different perspective of female moral discourse, labelled the ethics of care, as the opposite to the ethics of justice attributed to males. Gilligan was able to show that female's understanding of morality arises from the recognition of relationships and a belief in communication as the mode of conflict resolution. She asserts that 'the focus on care in moral reasoning, although not characteristic of all women, is characteristically a female phenomenon in the advantaged populations that have been studied' (Gilligan 1993, p. 212).

Gilligan's work was conducted by discussing a real life moral dilemma experienced by the women who were sampled. Gilligan (1982) interviewed 29 women in the US who were in the first trimester of pregnancy and were considering abortion. Although most of the women thought that they could make a choice about abortion, they did not feel that the foetus was of no value or had no status. The choice of abortion was viewed in terms of its effects on past, current and future relationships and life plans. The women rarely expressed abstract concepts of justice, whether it was the rights of the foetus to live or women's rights to choose abortion. It was concluded that the traditional tools of justice ethics did not express or articulate the women's moral experiences because the decisions made by women regarding the moral problem of abortion were constructed as a problem of care and responsibility in relationships rather than as one of rights and rules.

The different concerns of the ethics of care and the ethics of rights are presented in the following table.

**Table 2.2 Comparison of the ethics of care and the ethics of rights**

<b>Ethics of care</b>	<b>Ethics of rights</b>
Achieved through perception of one's self as connected to others	Achieved through process of separation and individuation of self from others
Moral dilemmas are deemed as contextual	Moral dilemmas are universal
Dilemmas are solved through inductive thinking	Dilemmas are solved through application of abstract or formal thinking
Development through stages is sequential and hierarchical	Development through stages is invariantly sequential and hierarchical
Principle of moral responsibility is reflected in the voices of women	Principle of moral responsibility is universal
Distinguished by an emphasis on attachments, issues of self-sacrifice and selfishness and consideration of relationships as primary	Distinguished by an emphasis on separateness, issues of rules and legalities and consideration of the individual as primary

Source: Reiter (1997).

From the comparison provided in Table 2.2 it can be concluded that:

1. The ethics of care emphasises responsibility, relationships and connection between a person and others; while the ethics of justice stresses rules and respect for the rights of others, rights that are rooted in objectivity, separation and individuation of self from others. In the corporate governance area, prioritising relationships as suggested by the ethics of care is translated into stakeholder interests within a company; which will be discussed later in Chapter 3.
2. In the ethics of rights, adherence to universal principles is sought to solve moral dilemmas; while the ethics of care suggests more contextual responses to moral issues (case-by-case or concentrate on a particular situation). Resolutions in the ethics of care concept include concern, care, continued attachment, responsibility, sacrifice and the avoidance of hurting another.

The different concept of autonomy and independence between the ethics of rights and the ethics of care is summarised in Table 2.3.

**Table 2.3 Different concepts of autonomy and independence**

<b>Ethics of care</b>	<b>Ethics of rights</b>
Individuals are interdependent	Individuals are separate
Relationships are in the form of attention and response	Relationships are hierarchical or contractual
Care is viewed as strength	Independence is viewed as strength
Importance of interdependence and interpersonal connections	Importance of autonomy and self- sufficiency
Needs of others are important	Rights of others are important

Source: Reiter 1997.

3. One of the ethics of care features, as depicted in Table 2.2, “principle of moral responsibility is reflected in the voices of women”, does not mean that the “different voice” of moral reasoning is exclusive to women (French and Weis 2000; Simola 2003). Gilligan herself (1982) emphasised that the different voice is characterised not by gender but by theme. It is suggested that women tend to exhibit a strong ethics of care, providing them the ability to speak in a different moral language, rather than just an ethics of justice or rule-based moral reasoning, which may be more characteristic of men.

Even though several researchers have empirically demonstrated that the gender differences exist in ethical decision making (Bampton and Maclagan 2009; O’Fallon and Butterfield 2005; Stedham, Yamamura and Beekun 2007), some weaknesses are inherent in those studies. First, there are statistical issues of generalisation from samples to larger and different populations, such as from students to managers. Second, the research was conducted using surveys with cases or vignettes that directly led respondents to a female-care orientation.

The application of the inclusive ethics of care in an organisational setting can be exercised either by male or female executives, even though quota rules such as “30% of board directors should be female” can still be followed to ensure the balancing voice. The existence of such quota rules is an example how the

application of the ethics of justice can be complemented by the ethics of care. Women's participation at senior levels of corporate decision making brings feminist values to enhance corporate governance as women tend to bring innovation, collaboration and relationship building. These represent valuable contributions to the company.

4. Since building good relationships is of primary importance, acknowledgement and effective management of relationships is at the core of the ethics of care.

Gilligan's theory was developed through an analysis and interpretation of quoted excerpts from interviews. However, Brabeck (1993) noted several weaknesses in Gilligan's study. First, conclusions about gender differences in moral development were drawn from an all-female sample of the abortion study. Colby and Damon (1983) suggested that comparative data with men faced with the same dilemma could be more powerful. The lack of comparison did not provide support for sex bias in Kohlberg's theory even though Gilligan's abortion interview resulted in interesting data on real life decision making processes. Second, the research also suffered through the interview technique. While it might have been rich in exploratory data, it was argued that 'generalisations from small numbers are risky, probe questions may vary from subject to subject, and the representativeness of the excerpts cited by Gilligan is uncertain' (Brabek 1993. p. 38).

Considering the identified flaws, Colby and Damon (1983) concluded that Gilligan's most important contribution was not her critique of existing moral developmental theories, but rather her preliminary extension of the moral development theory and method. For example, the use of real situations could be considered an advance over the use of hypothetical moral dilemmas. Despite the weaknesses, the work of Gilligan (1982) has sparked several research studies around the ethics of care. One of these was conducted by Noddings (1984) who equated care with "burdens": to care is to be in a burdened mental state, fearful or anxious about something or someone. Again, as discussed earlier, the description of ethics of caring as a feminine ethic does not imply that it speaks for all women nor excludes men. Since caring implies a relationship, the

ethics of care is naturally “other-regarding”, which means that we do not sacrifice ourselves when we care for others. This is why Noddings (1984) says that ‘caring is not in itself a virtue’ (p. 96). The genuine ethical commitment to care gives rise to the exercise of virtue but these must be assessed in the context of caring situations. For example, it is not just patience that is virtuous; it is patience with respect to the particular weaknesses of others.

The different perspectives within the moral discourse, as explained above, bring about different approaches to problem resolution. In the rights perspective, a problem may be solved by heavy reliance on the rules and respect for the rights of others. From this point of view, agency theory, which is often used to study and predict behaviour in accounting settings, ‘assumes competing, rational, self-interested players and focuses on contractual solutions to conflict’ (Reiter 1997, p. 302). In the care perspective the focus is on responsibility and relationships; hence, the resolution of conflicts is conducted primarily by compromise and negotiation.

However, Gilligan (1982) did not suggest that care and responsibility are the sole basis of morality and can be used to replace impartiality. Rather, Gilligan argued that ‘there is an appropriate place for impartiality, universal principle, and the like within morality, and that a final mature morality involves a complex interaction and dialogue between the concerns of impartiality and those of personal relationship and care’ (Blum 1993, p. 50). This is consistent with Brabeck’s (1993) suggestion to take Kohlberg’s and Gilligan’s theories together to form a morality that embraces reasoned and deliberate judgements to ensure justice is followed while maintaining care and concern. In this more adequate conception of morality, justice and care are joined, the demands of universal principles and contextual moral principles are bridged, and the need for autonomy and for interconnection is united.

A number of studies have used the ethics of care as a framework to investigate the issues being studied, namely, to improve auditor independence (Reiter 1997), to prevent organisational crisis (Simola 2003, 2005) and to develop stakeholder theory (Burton and Dunn 1996). However, none of the existing studies has used the care perspective as a

framework to identify the corporate governance practices and to develop a model to project and analyse the financial condition of a company. This study fills the gap in the literature, exploring the importance of a feminist ethical perspective within corporate governance.

The study of corporate governance practices from the ethics of care point of view challenges the idea that feminist ethics is only appropriate in small groups, such as the family, and least appropriate in large institutions (Taylor 1998). As care-giving (focused on identifying individual needs) is more time-consuming and because time is a scarce commodity in an economic sense, the ethics of justice (with the simple application of rules) might be more attractive. This study will be focused on the translation and application of care-giving principles to fill the literature gap around the ethics of care in company settings. This responds to the statement made by Folbre (1995 in Taylor 1998 p. 479 )that: ‘Feminist theorists are increasingly fond of the term “care,” but have yet to systematically explore its economic implications’.

In the imbalance of the application of the ethics of care in organisational settings, feminist theory is important ‘in explaining why a particular set of views stereotypically associated with women has been largely ignored and devalued’ (Reiter 1997, p. 321). The inclusiveness of feminist theory can be viewed as an attempt to provide alternative ways of theorising and to encourage researchers to explicitly add a value-based perspective to “previously-determined-value-free” research.

### **2.3.1 The position of the ethics of care in the business ethics literature**

Business ethics provide an understanding of what is good and right, a moral debate, in doing business. According to Velasquez (1998), there are four basic kinds of moral standards: utilitarianism, rights, justice and caring. Each of these business ethics moral standards, as they relate to ethics of care in the business literature, is presented in the following sub-sections.

### **2.3.1.1 Utilitarianism**

A “utilitarian” or a “consequentialist” approach states that actions and policies should be analysed based on the costs and benefits they will impose on society. The right action or policy in this type of ethics is the one that will generate the utility that maximises benefits or minimises costs, either from monetary or non-monetary perspectives. This approach is popular as many business analysts rely on the utilitarian cost-benefit analysis in evaluating business decisions.

The utilitarian principle assumes that all immediate and foreseeable future benefits and action or policy costs can be measured on a common numerical scale that will help determine the “right” action ‘whose net benefits are greatest by comparison to the net benefits of all other possible alternatives’ (Velasquez 1998, p. 73).

However, the measurement assumption creates a major problem because utility and the costs and benefits are sometimes difficult to measure and cannot be reliably predicted. To counter the measurement problem, utilitarian theorists argue that the requirement to have accurate quantifiable measurements can be relaxed when it is impossible. For instance, quantitative methods can be replaced by common-sense criteria, in other words, personal value judgements: intrinsic goods such as life and health are considered more valuable than instrumental goods such as money, and satisfaction of basic needs are more important than just satisfying wants.

### **2.3.1.2 Rights**

The ethics of rights contends that an individual’s entitlement to something is derived from a system of moral standards that are not limited to a particular legal system or jurisdiction. A basis of such moral rights was developed by philosopher, Immanuel Kant, who formulated the following principle (Velasquez 1998, p. 94):

An action is morally right for a person in a certain situation if, and only if, the person’s reason for carrying out the action is a reason that he or she would be willing to have every person act on, in any similar situation.

An action is morally right for a person if, and only if, in performing the action, the person does not use others merely as a means for advancing his or her own interests, but also both respects and develops their capacity to choose freely for themselves.

Compared to utilitarianism, the moral rights principles do not focus on the consequences of one's actions (greater utility) but on the person's interior motivations or the reasons behind the actions. An action will be morally right if it is motivated by a sense of duty, that is, a belief that it is the right way for all people to behave and a belief that people should not be viewed as objects without free choice.

The ethics of rights has limitations in explaining the limits of rights possessed by several people in conflicting situations. In this condition, the rights approach does not give suggestions about how the conflicting rights should be balanced or constrained in favour of one or the other. This limitation can be overcome by examining the relative importance of the interests that each right protects so that, while everyone has equal moral rights, they still have to respect to the interests of others.

#### **2.3.1.3 Justice and fairness**

The justice and fairness approach argues that there is a fair method for choosing the principles to resolve conflicts (Velasquez 1998). The first principle is that each person has an equal right that must be protected from attack by others. For example, advertising must be free of fraud and every employee is given the right to vote and freedom of speech. The second principle relates to social and economic inequalities; several steps must be taken to improve the condition of the least advantaged person in society. The maximisation of benefits for the neediest members of society implies that business institutions should be efficient in using their resources. Hence, pollution and other environmental problems are considered unjust and wrong because they consume resources inefficiently and reduce the benefits for the least advantaged persons.

Criticisms of this approach are centred on the claims that the justice principles are themselves mistaken and would not be chosen by rational people. This is because it is not an adequate method for choosing moral principles or ethical conduct in certain situations. However, the proponents of this approach claim that despite the weaknesses, the justice and fairness approach still offers many advantages. First, it recognises the basic inherent values in our moral beliefs, such as freedom and equality. Second, the

theory fits into basic economic institutions, such as the market system, providing fair work incentives and an appropriate division of labour.

#### **2.3.1.4 The ethics of care**

The ethics of care views ethics and moral tasks as partial and non-universal principles because we have to exercise special care towards particular persons who are valuable and in a close relationship. Two moral principles are emphasised in this approach, as follows (Velasquez 1998, p. 122):

1. We each exist in a web of relationships and should preserve and nurture those concrete and valuable relationships we have with specific persons.
2. We each should exercise special care for those with whom we are concretely related by attending to their particular needs, values, desires, and concrete well-being as seen from their own personal perspectives, and by responding positively to these needs, values, desires and concrete well-being, particularly of those who are vulnerable and dependent on our care.

These arguments are based on the claim that the identity of the self depends on the relationships of the self to other selves; that individuals cannot live in isolation from others.

As already indicated, the care approach to ethics has been developed primarily by feminist ethicists on the grounds that the history of ethics has been constructed from male points of view (for instance, the moral stages idea of justice developed by Kohlberg 1981) and has been built on assumptions and concepts that are by no means gender neutral (Held 1993). From a feminist point of view, moral theory needs to be transformed to take adequate account of the experience of women.

Criticism of the ethics of care relates to the possibility of conflicts with the other demands of utility, justice and rights. Critics claim that the ethics of care will lead to unjust favouritism. In response to this criticism, the proponents of the ethics of care concept state that we cannot get rid of all moral conflicts but we can learn to balance different demands in specific situations. As Held (1993) suggests, the feminist approaches to ethics share a commitment to rethinking ethics with a view to correcting whatever forms of male bias it may contain. There is no intention of neglecting the other moral or ethical considerations. Brabeck (1993) further recommends an

integration of justice and care to constitute a moral ideal: that ‘the moral person is seen as one whose moral choices reflect reasoned and deliberate judgments [*sic*] that ensure justice be accorded each person while maintaining a passionate concern for the well-being and care of each individual’ (p. 48).

The types of business ethics discussed above can be summarised as follows:

1. The ethics of care represents one set of business ethics that can be applied in certain situations without neglecting other kinds of business ethics. The four types of ethical approaches should be integrated to create a basic moral reasoning.
2. When there are conflicts between the care values and the other type of ethics, careful consideration is needed to determine the ethical conduct in specific situations.

In this thesis, discussion is limited to the analysis of corporate governance practices from the feminist ethics of care perspective. However, there was no intention to ignore the other types of ethics whenever applicable. For instance, the quantitative measurement principle of utilitarianism was employed in measuring several aspects of social and environmental factors. These are important factors in the projected model of financial condition because such monetary measurement is inevitable. The externalities cost was also acknowledged in line with ethics of care principles, even though it might be not material according to the ‘justice’ accounting rule. Despite the application of the other types of ethics, the ethics of care is still the “umbrella” that guides the study of corporate governance practices.

### **2.3.2 The position of feminist ethics of care in the feminist literature**

The thoughts of various feminist writers are presented here in brief to explore and identify the position of the feminist ethics of care in the feminist literature and to provide justification for the application of the concept of care in this study. While

feminist thinking is inter-disciplinary, inter-sectional and inter-locking in nature, Tong (2009) formulates the categorisation of feminist thoughts with recognition that labels are incomplete and highly contestable. Nonetheless, Tong’s categorisation is summarised here in Table 2.4.

**Table 2.4 A summary of feminist thinking**

	<b>Main thoughts</b>	<b>Critiques from opponents</b>	<b>Some Theorists</b>
Liberal feminism	<ul style="list-style-type: none"> <li>• The equal education, liberty, suffrage and rights for women are needed to eliminate gender inequity. Gender equality can be achieved by reforming the system.</li> <li>• The overall goal of this movement is to create a just and compassionate society in which freedom flourishes.</li> <li>• There are two types of liberal feminists:               <ol style="list-style-type: none"> <li>1. Classical liberal feminists favour limited government and a free market, view political, legal rights, freedom of expression, religion and conscience as particularly important.</li> <li>2. Welfare liberal feminists favour full function of government to provide citizens with basic needs and believe the market should be limited by taxes and a curb on profits.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Reason, freedom and autonomy are not as good as they sound.</li> <li>• The idea that women can become like men is inappropriate because there is a possibility that some sex differences are biologically determined rather than the products of culture and nurture.</li> <li>• Mainly focused on the interests of white, middle-class, heterosexual women.</li> </ul>	<ul style="list-style-type: none"> <li>• Mary Wollstonecraft (1759)</li> <li>• John Stuart Mill (1832)</li> <li>• Harriet Taylor (1851)</li> <li>• Betty Friedan (1963)</li> </ul>
Radical feminism	<ul style="list-style-type: none"> <li>• Women are different from men, so there is no need to find a place for women in the system.</li> <li>• Women are encouraged to become androgynous persons who embody both masculine and feminine characteristics.</li> <li>• Patriarchy’s sex/gender system should be changed because it is the root of women’s oppression.</li> </ul>	<ul style="list-style-type: none"> <li>• The claim on the different biologies of men and women is wrong because it denies the unique and fascinating history of individual men and women and tends to entrap women in rigid roles.</li> <li>• Patriarchy is not always about men hating women; there is rich diversity in different societies.</li> </ul>	<ul style="list-style-type: none"> <li>• Joreen Freeman (1970)</li> <li>• Gayle Rubin (1975)</li> <li>• Marilyn French (1985)</li> <li>• Mary Daly (1973)</li> </ul>
Marxist and socialist feminism	<ul style="list-style-type: none"> <li>• Unless capitalist economic structures are destroyed, two classes of rich and poor will continue to persist.</li> <li>• Because capitalism and patriarchy reinforce each other, women will</li> </ul>	<ul style="list-style-type: none"> <li>• The root of the attitudes towards women is not capitalism because the attitudes will never really change as long as both female and male psychology is dominated by the phallic</li> </ul>	<ul style="list-style-type: none"> <li>• Evelyn Reed (1970)</li> <li>• Juliet Mitchell (1970)</li> <li>• Iris Marion Young (1981)</li> </ul>

	<b>Main thoughts</b>	<b>Critiques from opponents</b>	<b>Some Theorists</b>
	<p>be found in the ranks of the have-nots.</p> <ul style="list-style-type: none"> <li>• Capitalism oppresses women as workers, but patriarchy oppresses women as women, an oppression that affects women's identity as well as activity. Therefore, patriarchy and capitalism should be overthrown to create a humanised society.</li> </ul>	<p>symbol.</p>	<ul style="list-style-type: none"> <li>• Heidi Hartmann (1981)</li> </ul>
Psychoanalytic feminism	<ul style="list-style-type: none"> <li>• The fundamental explanation for women's way of acting is rooted deep in women's psyche, specifically, in the way they think of themselves as women.</li> <li>• Gender identity and gender inequity are rooted in a series of infantile and early childhood experiences.</li> </ul>	<ul style="list-style-type: none"> <li>• The root causes of women's oppression are social rather than psychological.</li> <li>• Psychoanalytic feminists have not offered women any truly desirable ways to achieve a fuller human life.</li> </ul>	<ul style="list-style-type: none"> <li>• Alfred Adler (1927)</li> <li>• Karen Horney (1973)</li> <li>• Clara Thompson (1964)</li> <li>• Jacques Lacan (1977)</li> </ul>
Care-focused feminism	<ul style="list-style-type: none"> <li>• Women's capacity for care is a human strength that is different from male moral language.</li> <li>• Men's emphasis on separation and autonomy leads to the moral reasoning that stresses justice, fairness and rights. In contrast, women's emphasis on connections and relationships leads to the moral reasoning that stresses the wants, needs and interests of particular people.</li> <li>• The concepts, metaphors and images are associated with the mother-infant or parent-child relationship. However, the principles can be extended to the public domain.</li> </ul>	<ul style="list-style-type: none"> <li>• Linking women with caring may promote the view that women care by nature, and they should always care, no matter the cost to themselves.</li> <li>• The value of ethics of care has been over-estimated whereas the value of ethics of justice has been under-appreciated.</li> </ul>	<ul style="list-style-type: none"> <li>• Carol Gilligan (1982)</li> <li>• Nel Noddings (1984)</li> <li>• Sara Ruddick (1989)</li> <li>• Eva Kittay (1999)</li> </ul>
Multi-cultural, global, and post-colonial feminism	<ul style="list-style-type: none"> <li>• Group difference or women's diversity should be recognised; all women are not created or constructed as equal.</li> <li>• The definition of feminism must be broadened to include all factors (e.g. race, ethnicity, class, sexual identity, age)</li> <li>• However, it is suggested that women achieve unity in diversity through the sisterhood of friendship and the sisterhood of political solidarity.</li> </ul>	<ul style="list-style-type: none"> <li>• The concept of multi-cultural feminism is still unclear and there is a poor understanding of white culture.</li> <li>• It is not an easy task to strike a balance between universalism and relativism.</li> </ul>	<ul style="list-style-type: none"> <li>• Maria Lugones (1992)</li> <li>• Ella Shohat (1998)</li> <li>• Naomi Zack (1994)</li> <li>• Audre Lorde (1984)</li> </ul>

	<b>Main thoughts</b>	<b>Critiques from opponents</b>	<b>Some Theorists</b>
Eco-feminism	<ul style="list-style-type: none"> <li>• Human beings are connected to one another and to the non-human world: animal, planet and inert.</li> <li>• Human beings have dominated the non-human world or nature.</li> <li>• It is argued that patriarchy's hierarchical, dualistic and oppressive mode of thinking has harmed both women and nature.</li> <li>• Earth/nature is associated with woman (mother). The environment is ruined because men think that earth is only to be used.</li> </ul>	<ul style="list-style-type: none"> <li>• The nature–woman connection has been over-emphasised to women.</li> <li>• Eco-feminism grounded in women's traditional feminine virtues, maternal roles, and their special relationship to nature need not be reactionary but can be revolutionary to motivate women to get engaged in political action.</li> </ul>	<ul style="list-style-type: none"> <li>• Rachel Carson (1962)</li> <li>• Simone de Beauvoir (1952)</li> <li>• Sherry B. Ortner (1995)</li> <li>• Susan Griffin (1981)</li> </ul>
Post-modern and third-wave feminism	<ul style="list-style-type: none"> <li>• Woman is about the individual, no category and no group.</li> <li>• There is no single formula for being a good feminist.</li> <li>• Each woman is invited to become the kind of feminist she wants to be.</li> <li>• Diversity and change are accommodated because difference is the way things are.</li> </ul>	<ul style="list-style-type: none"> <li>• A list of core values is still needed as an agenda to help women to achieve a goal that goes beyond just being oneself.</li> <li>• Post-modern feminist thought is no more than jargon for an elite group of feminists and other social critics, "feminism for academicians."</li> </ul>	<ul style="list-style-type: none"> <li>• Judith Butler (1992)</li> <li>• Leslie Heywood (1997)</li> <li>• Jennifer Drake (1997)</li> </ul>

Source: Summarised from Tong (2009).

From the brief outline of various feminist theories, as presented in Table 2.4, it can be concluded that:

1. The ethics of care is rooted in care-focused feminism that stresses the caring nature of women as opposed to the justice nature of men.
2. Care-focused feminism was adopted in this thesis as it shapes the ethics of care needed as a complement to the ethics of justice and other types of ethics in running a business.

The other strands of feminism mainly focus on the oppression of women. Liberal feminism seeks equal opportunity with support from government to get rid of oppression. Radical feminists argue that the patriarchal system with its social and cultural institutions has to be eliminated to remove the oppression of women. Marxist and socialist feminism addresses the issue of structural change

in capitalism, believing that women's oppression was caused by the introduction of capitalism. Psychoanalytic feminism 'grounds women's oppression in the depths of the female psyche' (Crotty 1998, p. 165). Multicultural, global and post-colonial feminism acknowledges women's diversity and argues that 'race, class, and gender oppression could not continue without powerful ideological justification for their existence' (Collins 1990, p. 67). Post-modern and third-wave feminism also accommodates diversity and change and is 'particularly eager to understand the ways in which gender oppression and other kinds of human oppression co-create and co-maintain each other' (Tong 2009, p. 271).

Care-focused feminists, however, do not talk only about the oppression of women and the factors that contribute to such oppression. Instead, care-focused feminism emphasises the different virtues offered by women's characters and experiences that are also needed in the private and public domains, including in business. This category of feminism recognises the role of women's "different voices" in moral and ethical development and, hence, was considered the most relevant feminist thought to be explored in this thesis.

3. Eco-feminism focuses on the inter-relationship of human beings and nature and the domination of human beings over nature due to patriarchy's hierarchical, dualistic and oppressive mode of thinking. Even though eco-feminism also elucidates the importance of nature/environment, which is identified as one of the stakeholders in this research (discussed further Section 3.5.1), eco-feminism is deemed inadequate as the underpinning theoretical background of this thesis as there are many parties (or stakeholders) other than the environment that interact and should be recognised by companies. This category of feminism does not specifically address the relationships among human beings (stakeholders), such as shareholders, employees, government and suppliers whose interests are central to this study. Therefore, its relevance to this thesis is limited.

## **CHAPTER 3 CORPORATE GOVERNANCE PRACTICES FROM THE ETHICS OF CARE PERSPECTIVE**

*Remoteness of relationship makes it easier to behave unethically.* (Francis 2000, p. 32)

Chapter 3 discusses the corporate governance practices from the ethics of care perspective. The literature reviewed was selected based on several aspects, outlined as follows:

1. A review of previous studies that investigated, theoretically or empirically, corporate governance aspects using the ethics of care. These include the discussion of the shareholder or stakeholder model, which best describes the corporate governance from the ethics of care perspective.
2. A review of previous research that studied the risk management aspect of corporate governance, enabling the possibility of analysing this aspect from an ethics of care perspective.
3. The interpretation of corporate governance practices from the feminist ethics of care perspective was applied in developing a financial planning model. Therefore, previous studies that have discussed accounting and financial reporting using the ethics of care were also reviewed. This is because the financial projection needed accounting data from the financial reports as inputs for the model.

### **3.1 The ethics of care and corporate governance aspects**

The separation of ownership and control between owners and managers creates the notion of the principal-agent problem which naturally comes into existence (as predicted by the agency theory) and causes agency costs. These costs are incurred when: (1) managers as agents make decisions that will hamper value-maximising objectives; and (2) owners or principals incur costs to monitor managers and influence their decisions (Brealey et. al. 2000).

Corporate governance is a tool to minimise conflicts of interest between managers, owners and other parties involved in a firm (such as conflicts between managers and directors, creditors and shareholders, and shareholders and other stakeholders) by exercising control over managerial decisions. Rezaee (2009) highlighted the shareholder and stakeholder aspects of corporate governance. This was to acknowledge the evolution of the corporate governance role from reducing agency costs to creating long-term shareholder value and, more recently, to increasing value for all stakeholders.

The stakeholder model of corporate governance views the company from a broader perspective as the nexus of contracts between all corporate participants with the common goal of creating value. While the alignment of management interests with those of shareholders as investors is the focus of the shareholder aspect, the stakeholder model emphasises the value maximisation for all stakeholders, including contractual participants and social constituents. The stakeholders' value maximisation objective is achieved through several policies, such as minimising cost and waste while improving the product quality, enhancing employees' skills and satisfaction and contributing to the development of the community.

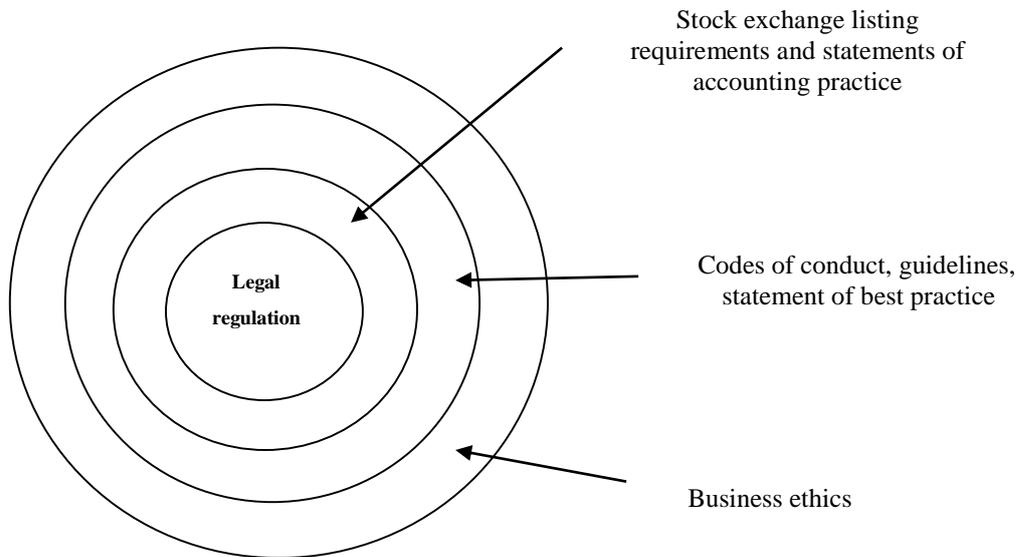
Even though the objective of maximising the shareholders' wealth is believed not to be leaving the interests of other stakeholders, it is contended in this research that the explicit statement of company's objective to maximise the stakeholders' interest will be better to guarantee the consideration of business impacts on stakeholders in the decision making process. According to Bird et. al. (2007) and Godfrey (2005), the stakeholder-maximisation objective will also not jeopardise the interests of shareholders. Bird (2007) analysed the relationship between five CSR activities, namely, contributions to community, employment diversity policies, employee relations, environment protection, and high product quality, and future stock returns that represent market valuation. Using a statistical regression method, the author found a positive relationship, which suggests that there is no conflict between various CSR activities and the shareholders' interest. In line with this, Godfrey (2005) presented theoretical explanations for the relationships between corporate philanthropy and shareholders' wealth. He argued that philanthropic

activity generates positive moral capital among communities and stakeholders, which contributes to shareholders' wealth. However, Bird et. al. (2007) highlighted a particular concern that management pursuing the objective of maximising shareholders' wealth may not have the incentive to be proactive in environmental policy. It is suggested that government should play an active role in ensuring that companies meet the legitimate concerns of stakeholders.

Increasing profits requires the acceptance and contribution from other stakeholders with different and often contradictory interests. In the end, if we relate the objective of the firm with the corporate governance mosaic then we find that 'protecting the rights of shareholders and preserving important long-term relationships with external stakeholders are important fundamentals to good governance practice', as stated by Dallas (2004, p.83). This really resonates with the problem of determining the objective of a firm due to the controversy between shareholders and other stakeholders about the primacy of the company's objective.

The importance of adopting stakeholder interests as a company objective was also triggered by several corporate collapses around the world. These called for better corporate governance structures to ensure that managers act not only to satisfy shareholders' interests but also that of other stakeholders 'as each of the stakeholders has a legitimate or moral right to claim on the value created by the firm' (Alam 2006, p. 218). Several theories, including social contract theory and institutional theory, support the stakeholder claim. In social contract theory, an organisation can get legitimacy if its activities are in line with social expectations. Within institutional theory, a broader perspective is adopted to include the internal and external organisational contexts. The claim is protected by several companies' legislation and other legal controls to build control and accountability systems within companies. Farrar (2001) depicts the relationship as "The structure of corporate governance", which is illustrated in Figure 3.1.

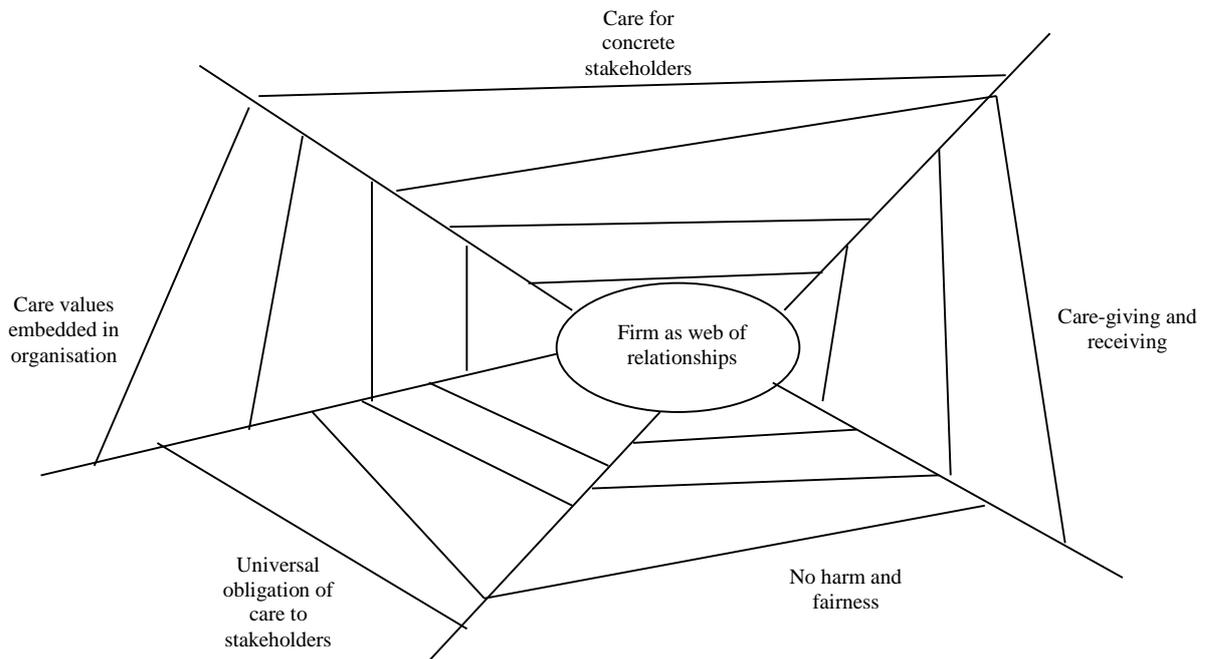
**Figure 3.1 The structure of corporate governance**



Source: Farrar (2001).

Another consideration before adopting the stakeholder model of corporate governance is to ensure that the interests of women are taken into account in corporate decisions. In the shareholder paradigm, the interests of women as workers, small creditors, mothers and small investors tend to be ignored (Sarraf 2002). The importance of considering women's voices and experiences is the focus of this study as the ethics of care is used to explain further the inter-relationship between corporate governance and business ethics. Feminist corporate governance 'recognises a multiplicity of actual and potential relationships with varying degrees of asymmetry of power distribution, within which there is an obligation of care' (Machold, Ahmed and Farquhar 2008, p. 673). The proposed feminist governance model is presented in Figure 3.2. In the model, governance is not about abstract relationships between anonymous and homogeneous stakeholder groups but healthy and contextual relationships between concrete individuals in one or several stakeholder groups.

**Figure 3.2 A feminist governance model**



Source: Machold, Ahmed and Farquhar (2008).

As feminist corporate governance emphasises the importance of relationships with among different parties, it has many points of contact with stakeholder theory. Stakeholder theory, as inherent in Freeman’s definition (1984), positions the firm as *contractually* related to any number of stakeholders. The contractual notion means that approaches to management are focused on the legalistic, contractual, masculine side of human existence (Burton and Dunn 1996).

Differing from the “contractual approach”, the feminist perspective has a broader view of a firm’s responsibility. It views the importance of protecting stakeholders who do not have a contractual relationship. Clarke (1998) provided the distinction between contractual and community stakeholders. The contractual stakeholders are shareholders, employees, customers, distributors, suppliers and lenders; while the community stakeholders are regulators, government, pressure groups and local communities. The stakeholders have their own interests and expectations of a company. The interests of some of the stakeholders were summarised by Woodward, Edwards, and Birkin (1993), as presented in the following table.

**Table 3.1 Stakeholders' interests**

<b>Stakeholder</b>	<b>Expectations of stakeholder from a company</b>	<b>Nature of accountability by a company</b>
<b>Employees</b>	Remuneration, employment security, conditions, training	Company reports, employment news, bargaining information
<b>Owners</b>	Dividends and share price appreciation	Annual report and accounts, merger and takeover information
<b>Customers</b>	Quality, service, safety, value for money	Sales literature, advertising, servicing
<b>Bankers</b>	Liquidity and solvency of company, value of security, cash generation	Cover ratios, collateral, cash forecasts
<b>Suppliers</b>	Stable and enduring relationship	Payment according to terms
<b>Government</b>	Compliance with law, jobs, competitiveness, accurate data	Reports to official bodies, press releases
<b>General public</b>	Safety of operations, contribution to the community	Safety reports, press reports
<b>Environment</b>	Benign operations, substitution of non-renewable resources	Environmental reports, compliance reports

Source: Woodward, Edwards and Birkin (1996).

An example of dealing with community stakeholders is when a company avoids the practice of bribery in developing countries, even though law enforcement in those countries is still lax. Another example might be avoiding polluting even when there is no sanction or government rule against it. In this sense, the acts in favour of the interests of stakeholders become the broad mission of management, bringing the consequence of sharing control with stakeholders. It is argued in this thesis that such commitment to non-contractual stakeholders by paying attention to their interests is a corporate governance concept from the caring approach perspective.

Wicks, Gilbert and Freeman (1994) argue that the “normal” stakeholder theory has retained certain “masculinist” assumptions that limit its usefulness. They then suggest the re-interpretation of the theory using feminist thinking, for two underlying reasons:

1. a moral concern: the stakeholder concept was not simply a strategy to increase profits, but an attempt to articulate the responsibility of a corporation to inside and outside parties; and
2. some masculine metaphors should be transformed to improve the responsiveness and adaptability of a firm.

This does not mean that all masculinist concepts should be abolished, as both justice and care perspectives are needed to shape moral perceptions.

The masculine and feminist readings of the stakeholder concept are summarised in Table 3.2.

**Table 3.2 Masculine vs. feminine metaphors in the stakeholder concept**

Masculine concepts	Feminist concepts
<p>Corporations should be thought of as ‘autonomous’ entities, separated from the external environment.</p> <p><i>‘Stakeholders are all parties who effect or are affected by the corporation, but they are not integral to its basic identity.’</i></p>	<p>Corporations represent webs of relationships among stakeholders.</p> <p><i>‘The corporation is constituted by the network of relationships which it is involved in with the employees, customers, suppliers, communities, businesses and other groups who interact with and give meaning and definition to the corporation.’</i></p>
<p>Corporations can and should enact or control their external environment.</p> <p><i>‘Change and uncertainty are threats that should be controlled. Failure to exercise control can result in lost opportunities, unfavo[u]rable market conditions, government restrictions, decreased profits etc. that threaten the survival of a company.’</i></p>	<p>Corporations should thrive on chaos and environmental change.</p> <p><i>‘Harmonious relationships with the fluctuating and dynamic business environment should be created, nurtured, and sustained, rather than conquered or controlled. Interdependence with other parties can emerge in patterns of cooperation, joint ventures or global alliances.’</i></p>
<p>The language of competition and conflict best describes the character of managing a firm.</p> <p><i>‘Conflict among various stakeholders interests is resolved by competition to determine the weightier or more compelling</i></p>	<p>Replace conflict and competition with communication and collective action.</p> <p><i>‘Better to find win win situations where what initially appear to be conflict of interest among stakeholders can be turned into forms of collaboration and effective</i></p>

Masculine concepts	Feminist concepts
<i>interest.</i>	<i>communication to resolve conflicts. Encouraging participation and collective action also helps validate decision making.</i>
<p>The mode of thinking in generating strategy should be “objective”.</p> <p><i>‘Objectivity through facts collection and empirical investigation pushes decision makers to be distant from their leanings, senses and interpretations. It means the stakeholders are silenced and their identities, emotions, needs, and perceptions should not be considered in the objective mode of thinking.’</i></p>	<p>Strategy as solidarity.</p> <p><i>‘Where strategy as objectivity seeks to describe decision as dictated by the numbers or as business decisions, the feminist view of solidarity requires that managers make choices based on the responsibilities and relationships it has with specific stakeholders. Starting with solidarity requires that the use of scientific data be done in service of specific wants, that it not impede the ability to talk in terms of particular persons and their needs, and that the numbers or facts it produces can never dictate decisions.’</i></p>
<p>Corporations should structure power and authority within strict hierarchies.</p> <p><i>‘Hierarchies or organizational structure tend to exclude the voice of stakeholders and erodes the effort to operate in terms of the needs and interests of stakeholders, and to recognize the validity of stakeholder concerns.’</i></p>	<p>Replace hierarchy with radical decentralisation and empowerment.</p> <p><i>‘Company structure and division of labour are not completely abolished, but are put in the service of humanising work practices and increasing employee involvement and responsibility. By pushing for more decentralisation, the firm not only nurtures communication and interdependence among stakeholders, it is able to draw more fully on the latent abilities and creativity of all. The worker benefits from more control and involvement in work, while the firm as a whole is better able to serve the interests of all stakeholders.’</i></p>

Source: Modified from Wicks, Gilbert and Freeman (1994), including the quotations.

The stakeholder theory from the feminist ethics of care perspective is built around relationships rather than just formal structures with clear demarcation lines. The values for stakeholders are created through caring for them and maintaining the web of cooperation to get people to work together to create value. Another key point from the Wicks, Gilbert and Freeman (1994) identification of masculine and feminine views of the stakeholder concept lies in the process of decision making; good corporate governance can be achieved when the rights and responsibilities of stakeholders are

reflected in corporate decision making. As presented previously, the “normal” stakeholder theory suggested the view of corporations as a set of relationships. However, these relationships are based on rights and power, on contractual, legalistic relationships. The feminist theory grounds the decision making in a stakeholder model, using not only the legalistic approach but also taking into account a moral emphasis.

On this specific point of decision making, Burton and Dunn (1996) identified another contribution that feminist ethics of care could bring to the stakeholder theory, complementing the arguments of Wicks, Gilbert and Freeman (1994). The latter proposed a rule of consensus and understanding according to the ethics of care. First, they suggested finding win-win solutions to resolve issues confronting a firm and its stakeholders. If this was not possible, communication was urged to encourage an understanding of others’ positions and eventual acceptance of a “second best” result. However, this approach would only work if all involved stakeholders adopted a caring approach to their interactions.

Burton and Dunn (1996) further claimed that any theory based on the feminist stakeholder concept would run into problems when ‘two stakeholders have opposite views of a decision and will be affected adversely if the decision goes against them’ (Burton and Dunn 1996, p. 141). In this case, the difficulty is to trying to answer the questions: Who should be given priority when a decision must be made? Whose contract should be broken? Burtin and Dunn (1996) recommended adopting a caring principle, that is, special attention should be given to the least advantaged members of the moral community. The suggested principle would then become, ‘Care enough for the least advantaged stakeholders that they not be harmed; insofar as they are not harmed, privilege those stakeholders with whom you have a close relationship’ (Burton and Dunn 1996, p.144). This principle adds to the understanding of the web of relationships, as discussed by Gilligan (1982). While she envisaged the web as relationships as involving all human beings and not only one’s circle of acquaintances, it is not clear in her writing as to how the extension to all persons is to be accomplished (Blum 1993). Burton and Dunn’s principle thus translates Gilligan’s web concept into a more practical understanding that could be applied in business settings.

Wicks (1996) later commented on Burton and Dunn's (1996) principle. He resisted the particular direction Burton and Dunn appeared to take because the care approach is much more contextual and intuitive, resisting abstract, universal and generalisable formulations. Relevance is created not through the more detailed application of general principles and the creation of decision rules, but through finding ways of embodying various traits, characteristics or virtues.

However, in this thesis, Wicks' (1996) comments have not been accepted while Burton and Dunn's approach has. This is based on the practicality needed in operationalising the ethics of care concept into company decision making processes. The universal decision rules are necessary to provide decision makers with principles to follow. The results of decision making will depend on the context and situation, as the least advantaged stakeholders as well as the immediately close ones could be different in various contexts.

The principle introduced by Burton and Dunn (1996) has several implications, as follows:

- (i) this approach may not eliminate harm but it at least limits harm to the most vulnerable parties;
- (ii) the caring principle should be applied by the company board and employees and be reflected in the company's ethics principles; and
- (iii) a firm must perform a stakeholder analysis in order to recognise which stakeholders have power and which have a stake in decisions and, most importantly, to understand which stakeholders are most vulnerable to the action. This means that the determination of whether a specific stakeholder needs more care than another will be company-specific rather than a general criterion.

However, for the purposes of this study, the Clarkson (1995) model of stakeholder ranking was applied. This ranking consists of primary and secondary stakeholders. Primary stakeholders are prioritised as they contribute vital support for the survival of a company. Such primary stakeholders comprise shareholders, employees, customers,

suppliers, lenders, as well as government and community. Secondary stakeholders are those who are not considered to be critical for the survival of an organisation; they include environmentalists, media and consumer advocates. Companies must build strong relationships with all key stakeholders to be competitive.

Even though Clarkson (1995) does not include the natural environment as a stakeholder, due to the lack of an appropriate political “voice”, it is assumed in this thesis that the natural environment qualifies as a stakeholder since it affects and is affected by a company’s operations. Even if it does not qualify as a stakeholder, according to Phillips (2003) there are at least two reasons why the natural environment should be taken into account in company decision making:

1. the natural environment may retain moral considerability regardless of stakeholder status.
2. the obligations owed to other stakeholders will likely dictate managerial diligence regarding the natural environment. (Phillips 2003, p. 144)

Haigh and Griffiths (2009) suggested that the natural environment could be easily identified as a stakeholder when climate change is brought into consideration. The dynamics of the natural environment can affect competitors, suppliers and customers. For instance, the paths of severe storms associated with sea temperatures will affect the areas where operations, suppliers, competitors or markets are located. The heavy floods associated with climate change which occurred in Jakarta, Indonesia in 2013 also impacted the supply chain. Therefore, companies should develop strategic approaches in regard to the natural environment as one of its stakeholders.

Another interpretation added in this thesis is that feminist corporate governance will implicitly pay more attention to the interests of women who present as a proportion of the stakeholder groups. This can be translated into any policies that are “women friendly”, such as work-life balance policies for employees, flexible working hours, child-care facilities and the empowerment of women in the community. The notion of women as stakeholders has been proposed by Grosser (2009). While Grosser’s study focused on women as employees, the principles can be applied to other stakeholder groups. Ultimately, this means that there is a longer list of stakeholders in the feminist

corporate governance structure, as each group is further sub-divided based on gender. A company that only applies the “normal” or “masculine” type of stakeholder model may have a large portion of women in its stakeholder cohort (such as in employees, shareholders and community groups) but this fact is not automatically translated into “women friendly” company policies. Hence, paying more attention to women’s interests through a feminist ethics of care perspective can enrich the literature on corporate governance.

Providing more chances for highly qualified women to participate in top management is also a factor of the feminist ethics of care in corporate governance practices. Research by Carter and Wagner (2011) suggested that companies in the US that achieve gender diversity and manage it well attain better financial results, on average, than other companies. This study was conducted in the period of 2004-2008 using three measures to examine financial performance: return on sales (ROS), return on invested capital (ROIC), and return on equity (ROE). The findings suggested that:

1. companies with the most women board directors (WBD) outperform those with the least on ROS by 16 percent;
2. companies with the most WBD outperform those with the least on ROIC by 26 percent; and
3. companies with sustained high representation of WBD, defined as those with three or more WBD in at least four of five years, significantly outperformed those with sustained low representation by 84 percent on ROS, by 60 percent on ROIC, and by 46 percent on ROE.

Other than enhancing financial performance, gender diversity can also enhance corporate governance by generating new ideas and approaches to decision making and corporate activity, as well as monitoring and eliminating all forms of discrimination and sexual harassment and evaluating managerial performance using the lens of diversity (Sarraf 2002). However, cracking the glass ceiling still has to be done to bring women into corporate decision making positions (Rosenblum 2009). Some barriers to participation include sex discrimination arising from institutional factors. In this respect, companies are slow to remove impediments for women due to their family

responsibilities, sex-based differences in competencies and experience (as women usually lack experience in senior management roles), sex-based preferences in terms of employment conditions (as women tend to be reluctant to be in a top corporate position), and women's lack of access to valuable social and financial networks and mentoring (Nelson and Levesque 2007). To overcome these barriers, paying more attention to female employees' interests, as interpreted through feminist corporate governance, is necessary. One example is to provide work/family balance programs to reduce the high turnover of women and give women opportunities to advance to more senior positions (O'Connor 2005).

As has been presented previously, the ethics of care perspective on corporate governance affects the stakeholder perspective. From this point of view, stakeholder theory appears as the theory of organisational management and ethics, because good corporate governance will enhance stakeholder value, company morale and productivity as all members of the firm, from the Board, management team, and the production workers, have a positive and important role to play (Francis 2000). Freeman and Velamuri (2008) went further, saying that the willingness to satisfy key stakeholders must be based on the idea of voluntarism by the company itself rather than being imposed by government agencies or courts.

The challenge for a company applying the stakeholder approach is more than simply maximising shareholders' wealth. However, this notion does not mean that all stakeholders must be treated equally, 'Corporations should attempt to distribute the benefits of their activities as equitably as possible among stakeholders, *in light of their respective contributions, costs, and risks*' (Sloan Colloquy in Phillips 2003, p. 27).

Beside the fulfilment of stakeholders' interests, another challenge faced by companies adopting the stakeholder principle is the relationship between social responsibility and corporate economic performance. This relationship is crucial to maintaining the sustainable operation of a business. Conceptually, Freeman and Velamuri (2008) stated that the stakeholder approach to business can integrate business, ethics and societal considerations. Technically, Ullmann (1985) hypothesised an inverted U-shaped

correlation between social and economic performance. To an optimal level, they are positively related. Conversely, beyond that level, the social activities will negatively affect the economic performance. This issue is discussed further in the next section about the ethics of care and sustainability reporting.

The feminist view on the stakeholder aspect will also lead to a broader view of risk management as a component of the stakeholder corporate governance model. Francis and Armstrong (2003) stressed the relationship between good ethical practices and risk management in that an essential risk management strategy is a commitment to ethics in an organisation or company. As the ethics of care is applied in this thesis, it is argued that the risk aversion approach is better to prevent a company from huge losses in investment and other activities. This approach can be traced to women's attitudes to risk, with several researchers claiming that females are more risk averse than males (see for example Powell and Ansic 1997; Smith 1999). From the feminist ethics of care perspective, the risk aversion approach is also aimed at protecting the stakeholders from any harm resulting from corporate collapses. According to Clarke (2010), the failure to adopt a risk aversion approach has led to recurring crises. For instance, the spectacular risks with extremely leveraged positions on many securities and derivatives that have been taken by investment banks and other financial institutions have led to the systemic crises in international financial markets commencing in 2007.

Another interpretation of the feminist attitude towards risk is related to social and environmental risk. This is due to the roles of nurturer and care-giver that are usually attributed to women and are associated with general issues of health and safety and social and environmental risks (Gustafson 1998). This type of risk arises when a company's behaviour or the actions of others in the operating environment create vulnerabilities. Kytte and Ruggie (2005) suggested that companies manage their social risks by fully embedding them in corporate strategy, particularly through CSR activities.

### **3.2 The ethics of care and sustainability activities, accounting and reporting**

Sustainability activities or CSR have been debated and practised in various forms for more than 4,000 years. Visser (2010, p. 312) states:

The ancient *Vedic* and *Sutra* texts of Hinduism and the *Jatakas* of Buddhism include ethical admonishments on usury (the charging of excessive interest), and Islam has long advocated the use of *zakat*, or a wealth tax.

Sustainability in doing business creates challenges for companies in making decisions that simultaneously improve the economy, the community and the environment. The benefits of engaging in sustainability include but are not limited to: reducing energy consumption; reducing waste and cost; creating innovative new products or processes; attracting and retaining best employees; and improving companies' images with shareholders and other stakeholders (Hitchcock and Willard 2009).

Stahl and Grigsby (1997) defined three levels of CSR as follows:

1. Minimum legal compliance: companies conduct activities in compliance with the minimum social requirements of the law.
2. Enlightened self-interest: companies use CSR programs as a strategic tool to send signals to the market that they are better than competitors and, hence, long-term profitability is expected from this position.
3. Pro-active change: companies take positions far beyond the requirements of the law by utilising their assets effectively to improve society, regardless of the direct benefit to the firm.

McWilliams and Siegel (2001) provide some examples of "beyond legal requirements" activities. These include the adoption of progressive human resource management programs (which can lead to flexible work schedules, work-at-home programs, reimbursement of child-care costs and health-care packages to lower-wage bracket employees); the development of non-animal testing procedures; support for local businesses and product attachment to social attributes or characteristics.

In order to push the agenda of sustainability on doing business, organisations must move from a mechanistic, patriarchal system of governance to one that is systems-based and views all stakeholders as important parts of an inter-dependent system. From this point of view, there is a close relationship between corporate governance from a

feminist perspective and the sustainability agenda, forming so-called “sustainable governance”. The sustainability agenda or CSR is ‘an extended model of corporate governance’, that governs the relationship between the board, management, employees and other stakeholders based on fiduciary duties owed to all the firm’s stakeholders.

The relationship between CSR and profitability remains inconclusive as the results of empirical studies report positive, negative, and neutral results (McWilliams and Siegel 2000). Often CSR programs burden the company with higher costs. For example, Clegg (2011) identifies the following costs associated with taking a sustainable approach:

- a. more expensive sustainable raw materials
- b. initial up-front capital cost of new plants and buildings, and others;
- c. additional maintenance costs over an ‘only fix it if it breaks’ approach to keep operations sustainable;
- d. more effort in the design of processes and products;
- e. extra product costs from production to packaging and disposal; and
- f. additional human resource costs such as paying a living wage.

All of the identified costs above are expected to generate benefits through reduced waste, reduced energy use, better productivity and improved image and sales. Weber (2008) presented a business case for a company to evaluate monetary and non-monetary CSR benefits. The values added from CSR activities are calculated by comparing the primary and secondary value drivers of each CSR benefit and costs.

The high up-front costs to become sustainable drive the necessity of financial analysis and planning to ensure that a company remains economically viable, avoiding bankruptcy while continuing to be socially and environmentally responsible. Regardless of the inconclusiveness of empirical results, it must be concluded that sustainability decisions come at a cost to profitability.

The notion of being simultaneously profitable and socially responsible was acknowledged by Carrol (1979) who proposed the following four-part definition of CSR:

1. Economic responsibilities - This is the fundamental assumption of business social responsibility to produce goods and services that society wants and needs and that make a profit.
2. Legal responsibilities - This requires business to comply with laws and regulations in conducting their economic mission.
3. Ethical responsibilities - These represent society's expectations of business to behave ethically and above legal requirements by respecting peoples' moral rights and avoiding harm or social injury.
4. Discretionary responsibilities - The discretionary or philanthropic responsibilities require business to make voluntary contributions based on desire, not because they are mandated or required by law. Examples of voluntary activities include making philanthropic contributions, being active in pollution abatement or providing child-care service centres for working mothers. Feminist ethics centre on the importance of relationship maintenance that goes beyond rules and regulations and maintains good relationships with stakeholders.

Balancing economic, social and environmental factors is necessary; a company that becomes too charitable may sacrifice its financial viability, meaning that the economic benefit will be less than the increased costs and the business may become unsustainable. However, considering the financial aspect does not mean conflict with the ethics of care perspective. The corporate governance practices from the feminist perspective suggest that the relationships with stakeholders be maintained in order to create long-term value and achieve business sustainability. The maintenance of such relationships can be done through CSR activities. At the practical level, the amount spent on CSR activities has to be considered in the context of the company's financial position.

The extent to which a firm can follow pro-CSR policies should be determined at managements' discretion and be treated as any other investment. The optimum level

that balances the need for maximising the benefit (“profit from CSR”) and the “demand for CSR” from multiple stakeholders can be resolved by performing a cost-benefit analysis (McWilliams and Siegel 2001) and by implementing ‘stakeholder dialogue and assessment of their expectations and, consequently, by translation of these expectations into the strategic plan of the organisation’ (Castka et. al. 2004, p. 222). In this thesis, strategic planning was considered using the optimisation approach. This is discussed further in Chapter 4.

### **3.2.1 Sustainability accounting and reporting**

Sustainability accounting and reporting are discussed briefly here as the ethics of care view of corporate governance is related to this issue. The discussion is necessary as the projection of the company’s financial condition, as conducted in this thesis (discussed in Chapter 4), involved financial amounts resulting from the accounting process. The construction of a whole new set of accounting concepts under the ethics of care, however, was not necessary as applications of the ethics can be found in the existing sustainability accounting and reporting concepts.

Sustainability reporting is used as a tool to communicate a company’s social performance to its internal and external stakeholders. It is an extension of accounting reports, including information about products, employee interests, community activities and environmental impact. The history of sustainability reporting began with employee reporting and then moved on to social reporting, environmental reporting, triple-bottom-line reporting and is expected to reach the ideal of sustainability reporting (Buhr 2007). Triple-bottom-line reporting does not meet the definition of sustainability reporting as other aspects are incorporated, such as justice and equity.

There is a possibility that a company provides social reporting simply because it cares about how it is perceived by stakeholders. In other words, the reporting is only used to create a “good image” of CSR. Therefore, the use of a research method to analyse the report, such as content analysis, should be exercised carefully to identify the *actual* level of sustainability activities in a company. The emphasis should be on social and

environmental performance measurement, which goes beyond glossy company reports and public relations.

One important issue in sustainability, specific to accounting, is related to the question of how to account for environmental and social impacts. While financial accounting has already been standardised through accounting standards, there are, as yet, no generally accepted practices for evaluating non-financial performance. In order to develop long-term sustainability, a company has to be transparent about both positive and negative stakeholder effects. This means that supplying only financial information might not be adequate and should be supplemented with other information on the effects on company stakeholders, such as wages, employment, health, taxes and levels of pollution. There are several guidelines to assist in such reporting, including the Global Reporting Initiative (GRI), which was a joint initiative of the US-based Coalition for Environmentally Responsible Economies (CERES) and UNEP (United Nations Environment Program) in 1997. However, the number of companies that use these guiding principles is still small.

Despite the current limitations, CSR and sustainability reporting (which may be presented as part of the annual report or in a stand-alone report) can be said to be the ‘most developed form of non-financial reporting’ (Elkington and Zollinger 2004, p. 200), attempting to capture, measure and value performance across the triple-bottom-line of economic, social and environmental value-adds. The wider conception of performance and reporting is devoted to presenting the accounting information to a broad range of stakeholders rather than purely to shareholders (Alam 2006).

In Australia, social and environmental reporting remains predominantly voluntary. Only a few specific Australian accounting standards require companies to provide such reporting. These were identified by Deegan (2010), as follows:

- a. AASB 116 Property, Plant and Equipment requires the cost of an item of property, plant or equipment to include the initial estimate of the costs of dismantling and removing the item and restoring the site on which it is located. An entity incurs the

obligation for this either when the item is acquired or as a consequence of having used the item during a particular period for purposes other than to produce inventories.

- b. AASB 137 Provisions, Contingent Liabilities and Contingent Assets state that obligations relating to environmental performance could be included in either “provisions” or “contingent liabilities”, depending upon the circumstances. It also discusses constructive obligations especially in Paragraph 10 and 21, which will often require recognition in an entity’s financial statements.

In conclusion, Deegan (2010) contended that there is still limited coverage of environmental issues in accounting standards. The nature of limited coverage is also restricted to the financial consequences of various actions rather than motivated by a true willingness to present the information about social and environmental performance.

Besides the lack of appropriate accounting standards, Deegan (2010) also asserted that “traditional” financial accounting has several limitations in terms of reporting externalities by companies. Externalities are the impacts a company has on external parties, either human or non-human. Those effects can be related to the social and environmental implications of a company’s operations and merit special consideration when developing more ‘friendly’ accounting and reporting. The limitations of traditional accounting, as identified by Deegan (2010), are set out as follows:

- a. There is a “Major focus on the information needs of stakeholders with a financial interest” (Deegan 2010, p. 1260). This focus denies the needs of other parties seeking information that may be non-financial in nature. Companies can provide this information voluntarily.
- b. The concept of materiality in accounting tends to preclude the reporting of social and environmental information because something which is considered immaterial does not have to be disclosed in financial statements. In many cases, the social and environmental externalities cannot be quantified and are generally not considered to be material and, therefore, do not need separate disclosure. For example, the

pollution arising from a company engaging in just-in-time production is not measured and disclosed.

The fact that the social and environmental information is not disclosed, because the individual expenditure is deemed to be immaterial or because it cannot be financially measured, ignores the possibility that such information can have significant impacts on a company's reputation and stakeholder support. Therefore, it is suggested that the impact should be determined and measured even though the determination is a dynamic and subjective process. Stakeholder expectations must be considered and careful examination should be made to determine whether these stakeholders are different from those described in the financial materiality concept.

- c. The practice of discounting liabilities to their present value tends to make future expenditures less significant in the present period depending upon the discount rate chosen and assumptions about advances in technology. As a result of discounting, future environmental expenditure that is remedial (such as site clean-up and remediation of contaminated land) will be recognised as of little or no current cost and therefore warrant no disclosure. Hence, such practice is inconsistent with the sustainability agenda and does not make good ecological sense.
- d. The entity assumption requires a company to be treated as a separate and independent unit from its owners, other companies and other stakeholders. Using this assumption, a transaction or an event that does not directly affect the entity will not be recorded and reported for accounting purposes. This means that externalities will also be ignored, making performance measures such as profitability incomplete from a broader societal perspective. Rubenstein (1994) suggested that to account properly for sustainability issues, the entity should be the firm (in the natural capital context) upon which it is economically dependent but may not own (according to the conventional sense of private property).
- e. Current financial accounting does not recognise environmental resources as company assets as they are not controlled by companies (which are required to recognise assets from an accounting perspective). This limitation brings about the

consequence of not recognising the expenses of using or abusing the resources unless there are fines or other cash flows occurring. It also leads to a failure to recognise the full costs of production, which includes natural capital such as water, air or fertile land.

- f. The measurability concept tends to preclude the recognition of environmental obligations and externalities in financial accounts because no reasonable valuation method is currently available to accurately measure the externalities. Various estimates should be applied to place a monetary value on certain social and environmental resources. However, this may lead to inaccuracy of the measurement.

These limitations highlighted by Deegan (2010) resonate with a feminist revision of accounting. This is aligned with the political perspective of oppressed parties as suggested by Hammond and Oakes (1992). The following changes in accounting practice might be suggested through feminist theory (Hammond and Oakes 1992):

- a. Money will not be the only unit of measurement. Qualitative information on corporate contributions to the community will also be included. This can be done in the disclosures a company provides in its reports.
- b. Information on distribution of corporate wealth will be provided, such as information on the difference between the highest and lowest paid employees, health-care provisions, training programs, gender and age compositions of each group of employees and employee ownership.
- c. Women will not be objectified or exploited as decorative additions to financial reports.
- d. Environmental information will be provided to induce more socially responsible behaviour, such as information on the natural resources exploited by the company, the location of environmental waste sites and the company's programs to overcome damage to the environment.
- e. Accounting will include information on other areas of social responsibility, especially in regard to multi-national corporations' operation in developing countries.

The development of the optimisation model using accounting from a feminist ethics of care point of view is discussed further in Chapter 4.

### **3.3 Inferences**

Based on the preceding discussion on ethics of care, sustainability activities, accounting and reporting, the following inferences can be drawn:

1. Feminist ethics, although rooted in a feminist political perspective, is not necessarily only exercised by women. Like other ethical systems, it can be categorised as “virtue” ethics and is considered more than just a gender issue. It is the human quality that counts, not the gender itself. The consequence of this interpretation influences the choice of samples and the evaluation of a company’s activity from the feminist ethics point of view.
2. Feminist ethics envisages the importance of relationship maintenance that goes beyond rules and regulations. This means that a company’s CSR activities should go beyond complying with regulations from government or international pressures; they should also be designed to maintain good relationships with stakeholders. This means that the nature of activities should not only be mandatory or compulsory but also, more importantly, voluntary or discretionary.
3. Because the projection of a company’s financial condition is central to this thesis, all activities must be measured in monetary terms by taking into account social and environmental accounting. The optimal level of CSR activities that still generates the necessary company outcome (in terms of revenues/profits) will be determined using the optimisation approach (discussed further in Chapter 4).

### **3.4 Previous research using the content analysis method**

Disclosure is one component of governance aimed at protecting stakeholders’ interests of timely and accurate reports. A content analysis method is generally applied to the study of company disclosures. Consequently, this method was used in this thesis to study the corporate governance practices from a feminist ethics of care perspective. A discussion of the content analysis methods as applied in previous research is presented in this section to provide context for this thesis.

The content analysis method can be categorised as quantitative or qualitative, applied within various theoretical frameworks. Using legitimacy theory, which is based on the idea that in order to continue operating successfully corporations must act within the bounds of socially acceptable behaviour as identified by society, Deegan, Rankin and Tobin (2002) examined the corporate social and environmental disclosures of BHP Billiton Ltd (one of Australia's largest companies) from 1983 to 1997. Their research was motivated by Guthrie and Parker (1989) who analysed the same company's disclosures to see whether corporate disclosures were made as reactions to environmental pressures and aimed at legitimising the corporation's existence and actions. Unlike Guthrie and Parker (1989), whose findings did not support legitimacy theory, Deegan, Rankin and Tobin (2002) found significant positive correlations between community concern for particular social and environmental issues (which was measured by the extent of media attention) and BHP Billiton's annual report disclosures on the same issues. The findings represent support for legitimisation motives for the company's social and environmental disclosures as BHP Billiton adopted disclosure strategies to comply with community expectations. Support for the legitimacy theory, as an explanatory factor for environmental disclosures, was also found by O'Donovan (2000) who utilised semi-structured interviews with senior personnel from three large Australian public companies to investigate such legitimacy motives.

Kent and Monem (2008) went beyond legitimacy theory to include good corporate governance as another factor that drives the triple-bottom-line reporting. Using binary logistic regression, their research provided support for both legitimacy theory and good corporate governance structures as the explanations for the adoption of triple-bottom-line reporting by Australian companies.

Just as BHP Billiton has become the favourite case study focus for research in Australia, General Motors (GM) in the US also enjoys the same status. Neimark (1992) used the dialectical theory to analyse the non-financial aspects of General Motor's annual reports. She was able to show that through the history of the company, the reports were used to assert the superiority of management over the unions, support social consumption and reinforce family values. The implication here is that accounting

consists not only of financial statements, but also includes photos and text from annual reports, which she calls the “hidden dimensions”. Even though such hidden dimensions are usually examined in content analysis, Neimark (1992) provides a new way of thinking in terms of studying the history of a company through its annual reports.

Still focussed on GM’s annual reports, Tinker and Neimark (1987) developed a longitudinal study on the relationship between crises in late capitalism and the changing roles women and men play in such crises as reflected in the annual reports of a corporation. Using the content analysis method, text and photographs relating to the issues were measured according to the space devoted to them in the reports. The inequality in the representation of women and men was observed in GM’s annual reports between 1917 and 1976: ‘...women appear in the annual reports as adornments and symbols of (presumably) male achievement’ (p. 83). The same finding was regrettably still ubiquitous 20 years later in the annual reports of 30 firms in the Netherlands, which were studied by Benschop and Meihuizen (2002) using the same method.

Over a shorter period, from 1971 to 1990, Malone and Roberts (1996) examined the public interest reports of GM and discussed the principal areas disclosed by the company during those years. These areas were women and employment issues, energy and the environment, international operations, automotive safety and philanthropic activity. They concluded that there were at least three principal forces driving GM’s disclosures: the extent to which public attention is focused on the problem; potential costs associated with GM’s adherence to a public standard of social behaviour; and the relative objectivity of an issue.

Beside the quantitative content analysis method, the qualitative one is also used in several studies. Grosser, Kate and Moon (2008) investigated the reporting of gender equality in the work-place among UK companies. They used a CSR perspective as there had been growing interest in employee issues, including gender and diversity within CSR. Quantitative analysis was based on the companies’ annual reports, CSR reports and websites, searching the reporting of data on such issues as work-place profiles,

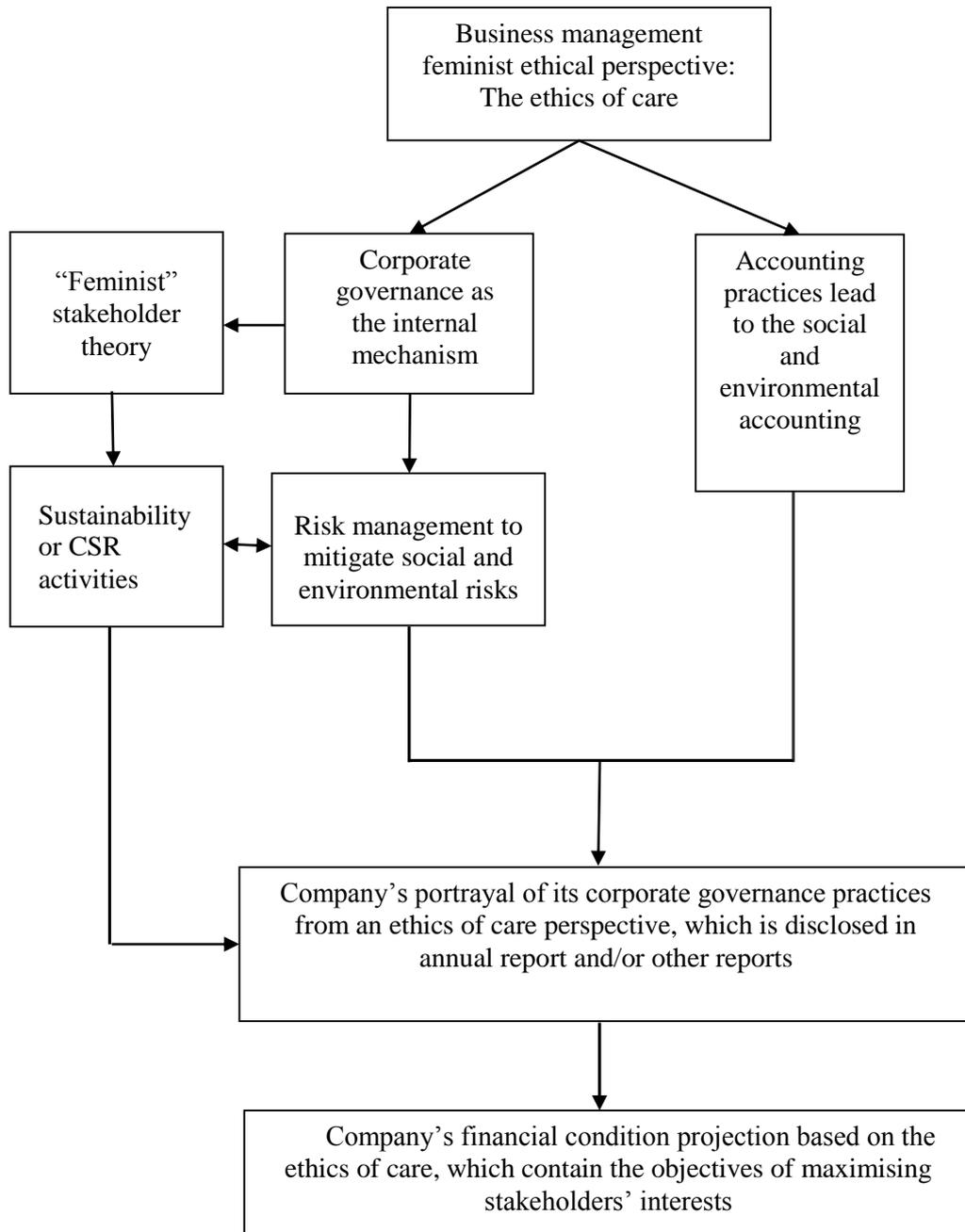
career development, equal pay, work-life balance and general management related to gender issues. Then a qualitative content analysis was performed by differentiating two main categories of data. The first included rhetoric, declarative, policy, endeavour or intent and program reporting. The second included targets, quantified data (monetary or non-monetary), descriptions of performance and outcomes. The findings suggested that there was some improved reporting of gender performance information beyond basic work-place profiles. This had occurred despite no new reporting regulations.

From a review of prior research, it can be concluded that company motivation to engage with its stakeholders (including CSR activities) is driven by the need for legitimacy (external factor) and improvement in corporate governance structures (internal factor). This thesis focuses more on the internal factor using the feminist ethics of care to study corporate governance practices, an approach that has not been widely applied in previous research. In addition, the quantitative content analysis method is used in most of the research, but this thesis applied a qualitative content analysis method to gain a more thorough and deeper understanding of corporate governance practices. Finally, while some researchers have used case studies, empirical research using a sample of many companies still dominates. This thesis used the former approach, with a case study of an Australian company.

### **3.5 Conceptual framework, research questions, and propositions**

The conceptual framework of this thesis was developed from an analysis of feminist ethics, corporate governance and risk management, as outlined in the preceding discussions. This framework is shown in Figure 3.3, which is an elaboration of the framework of theoretical constructs depicted in Figure 1.1. The ethics of care becomes the under-pinning perspective, shaping the corporate governance and accounting practices of a company. Risk management emerges as an essential component of corporate governance, receiving special attention in this study because of its importance in developing financial management strategies. Together with external factors in the form of regulatory environments, these factors should be considered in developing strategies to achieve the benefits of good corporate governance.

**Figure 3.3 Conceptual framework**



Having developed the conceptual framework, the research questions and propositions of this study could be developed. As has been explained, the aim of this study was to develop integrative financial management strategies in a financial planning model using the feminist ethics of care as a framework. It was presumed that the ethics of care could be used as an approach to design the strategies. The research questions and related propositions of this study are set out in Table 3.3.

**Table 3.3 Research questions and propositions**

<b>Research questions</b>	<b>Propositions</b>
<p>1. What are the existing corporate governance practices applied in a sample company from the feminist ethics of care perspective?</p> <p><i>(This was analysed using a qualitative content analysis of the reports produced by a company)</i></p>	<p>1. The application of the feminist ethics of care will result in a stakeholder model of corporate governance that places more emphasis on women's interests and maintaining good relationships with stakeholders.</p>
<p>2. After examining the existing corporate governance practices, how will the financial condition of the company be affected if the feminist ethics of care is applied?</p> <p><i>(This was projected using the quantitative optimisation model)</i></p>	<p>2. It is projected that the financial condition will be stable, as the company will put more effort into balancing stakeholder interests while addressing social and environmental risk.</p>

## CHAPTER 4 RESEARCH METHODOLOGY

*Representation of the world, like the world itself, is the work of men; they describe it from their own point of view, which they confuse with absolute truth*  
(Beauvoir 1974, p. 134)

### 4.1 Introduction: feminist research

The phenomenological or critical theory paradigm and the research questions presented in Chapter 2 provided guidance to the methodology for this research. The choice of mixed methods to answer the research questions is rooted in critical theory, especially the feminist paradigm.

In principle, feminist research is connected primarily to the feminist struggle by documenting women's lives, experiences and concerns (Hesse-Biber and Leavy 2007). No single method, methodology or epistemology informs feminist research, as various perspectives, a wide range of methods and methodologies and multiple lenses can be applied, depending on the research question(s) and objective(s).

Feminist research originated within an increasing awareness that women's lives and experiences were not accurately represented in mainstream social research. These omissions prompted the early feminist scholars and researchers to rework the traditional theoretical and methodological techniques, such as providing constructive critique for positivism as the most widespread and well-known paradigm in social science.

Such reworking of positivist approaches, characterised by objective, value-free knowledge, neutral and value-free instruments of measurement, resulted in feminist modifications to include women's experiences. Feminist researchers who remain committed to these basic characteristics are known as feminist empiricists. The remedies for the shortcomings and omissions in the traditional positivist paradigm are conducted by collecting new empirical data that take women's experiences into account, including women in research samples or remodelling some positivist methods. These modifications are believed to increase the possibility for neutral, objective and generalisable research findings (Hesse-Biber and Leavy 2007).

However, there have been efforts to engage in providing alternatives to the positivist paradigm, rather than simply providing reworks and modifications (Hesse-Biber and Leavy 2007). This approach incorporates and pays attention to elements associated with women, such as interpretation, subjectivity and emotion, which are usually excluded from mainstream, positivist research. This feminist epistemological framework challenges the objectivity concept of typical empirical research, as specific experiences and perspectives can become a tool for knowledge building rather than barriers to uncovering the objective truth. Support for subjectivity in a research methodology does not mean a rejection of the notion that research should be rigorous, critical and accurate; it just provides a chance for women to draw on personal knowledge, re-evaluate ways of knowing, develop theories and use women's experiences as sources of knowledge. Such experiences had been devalued or ignored in the positivism stream, which emphasises rationality and objectivity.

This thesis can be categorised as taking the “alternative approach” of feminist research. Even though a quantitative method was used in addition to a qualitative one, it is not value-free research as the feminist ethics of care is the paradigm that guides the quantitative method. Generalisability is also not the research objective, as a case study approach was applied in this thesis.

The mixed methods used in this thesis comprise qualitative content analysis and the quantitative optimisation method. Both are discussed in the following sections.

## **4.2 Qualitative analysis**

Qualitative techniques emphasise the processes and meanings not examined or measured in terms of quantity, amount, intensity or frequency (Denzin and Lincoln 1998). Cassell and Symon (1994, p. 7) list the characteristics of qualitative research in contrast to quantitative research as follows:

... a focus on interpretation rather than quantification; an emphasis on subjectivity rather than objectivity; flexibility in the process of conducting research; an orientation towards process rather than outcome; a concern with context—regarding behaviour and situation as inextricably linked in forming

experience; and finally, an explicit recognition of the impact of the research process on the research situation.

Many qualitative techniques can be used in particular research, such as ethnomethodology, phenomenology, hermeneutics, interviews, content analysis and survey research.

Content analysis was applied in this thesis to study the corporate governance practices of BHP Billiton through publicly available reports. Information from the popular press was also used to supplement the formal BHP Billiton reports.

The analysis was also performed to identify necessary variables and measurements that could be adopted in developing the financial planning model using the quantitative optimisation approach.

#### **4.2.1 Content analysis**

Content analysis is a research method to analyse texts (or other meaningful matter) in the contexts of their uses with the purpose of providing knowledge, new insights, a representation of facts and a practical guide to action (Krippendorff 2004). It is considered a reliable method and result in replicable findings and valid inferences from the texts. The technique can be quantitative and qualitative.

The content analysis technique has several advantages compared to other data-generating and analysis techniques. Weber (1990) lists the following:

- a. Communication is an important aspect of human interaction. The content analytic method assists in understanding the communication process and information through text or transcripts.
- b. Both qualitative and quantitative operations on text can be applied in the content analysis method.
- c. The method can be used in conjunction with other reliable data to assess the relationships among economic, social, political and cultural change.

- d. There is little danger of any force for change that confounds the data since the analysis usually yields unobtrusive measures in which no parties that send or receive the message are aware that the information is being analysed. This means that the data are “naturalistic” which provides a unique level of authenticity.

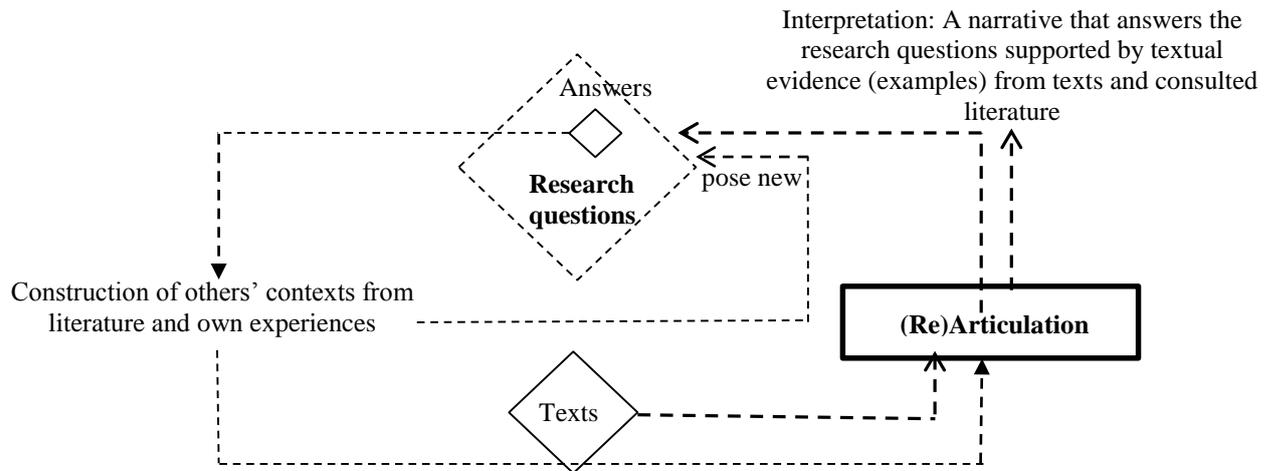
The qualitative technique of content analysis was applied in this thesis. This is defined as ‘a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns’ (Hsieh and Shannon 2005, p. 1278). Using this method, the emphasis is not on how many or how frequently certain words appear in a text but, rather, on the meanings of the texts. The analysis is not limited to a submissive interpretation of the disclosure; external audits were also carried out by matching company disclosures with external sources (such as media and websites). Whenever possible, a quantitative analysis is also performed, although this is not the major focus. Beside the texts, visual images in the form of photographs or pictures are also studied in the annual and sustainability reports to gain a richer understanding.

Qualitative or interpretative content analysis has roots in literary theory, the social sciences (symbolic interactionism, ethnomethodology) and critical scholarship (such as feminist theory). According to Krippendorff (2004), the qualitative approaches to content analysis have the following characteristics:

- a. a thorough reading of relatively small amounts of textual matter is required; and
- b. the given texts are interpreted or rearticulated into new narratives (analytical or critical) which are sometimes opposed to the positivist mode of inquiry.

The processes and procedures involved in qualitative content analysis are depicted as follows.

**Figure 4.1 Qualitative content analysis**



Source: Krippendorff (2004), p. 89.

The diagram in Figure 4.1 outlines the procedures followed in qualitative content analysis (Krippendorff 2004). These are explained as follows:

1. The flow begins from re-contextualising given texts using known literature, re-articulating the meanings of the texts and allowing the re-definition of research questions and answers until interpretation is satisfactorily reached.
2. There is no particular sequence of analytical steps because of the holistic qualities of texts. It is deemed appropriate to go back and revise earlier interpretations after doing some later readings. Due to the difficulties of standardising such readings, this process severely limits the volume of texts that can be analysed consistently and in accordance with uniform standards. Moreover, Krippendorff (2004) states that this process is difficult to describe and to communicate, hence, qualitative analysis tends to be worked alone by the researcher and replicability is generally not a major concern.
3. Multiple inferences and interpretations are possible from consideration of diverse voices (readers), alternative perspectives (from different ideological views), oppositional readings (critiques) or varied uses of the text examined by different groups.
4. The interpretations are supported by providing into the conclusion quotations from the analysed texts and literature about the contexts of these texts.

As qualitative content analysis is used to interpret a document as a whole or in part, the texts are first grouped into several categories or themes. A category is a group of content that has common meanings (Krippendorff 2004). A category can be divided into a number of sub-categories or sub-sub-categories at varying degrees of abstraction (Graneheim and Lundman 2004). The analytic categories can come from the data; for example, words are used directly from the texts to form the code categories (Leavy 2007). Various texts and artefacts can be studied, including historical documents, newspapers, magazines, photographs, books, diaries, literature, music, cinema, television and websites.

The content analysis used in this thesis aimed at looking for any corporate governance practices using the ethics of care lens that have been disclosed by the company in its annual and sustainability reports. It was not aimed at searching for the motivation that drives the company to disclose certain “feminist governance” items. Motivation might be associated with legitimacy needs, which are best studied using legitimacy theory, an example of which could be measured through the increase in environmental disclosure (such as O'Donovan 2000).

The themes used in this qualitative content analysis have connections with theories other than the feminist ethics of care, such as stakeholder theory and legitimacy theory. This is acceptable for the following reasons:

1. The ethics of care principle of maintaining relationships with other parties is consistent with the principle applied in stakeholder theory. However, as discussed in Chapter 3, there are three different foci on the stakeholder issue between stakeholder theory and the ethics of care, which are:
  - a. the ethics of care puts more attention on women—who work in a company or institution or who are in the community—and their interests even though women are not explicitly mentioned as one of the stakeholders.
  - b. the ethics of care considers not only contractual stakeholders but also non-contractual ones.

- c. in decision making, the ethics of care relates the caring principle to the least advantaged members of the moral community.
2. In legitimacy theory, corporate actions and disclosures are performed as reactions to environmental factors with the aim of legitimising those actions. A company applying the ethics of care principles may exercise and provide the same actions and disclosures, however, the aim goes beyond legitimacy to a genuine “care” for stakeholders.

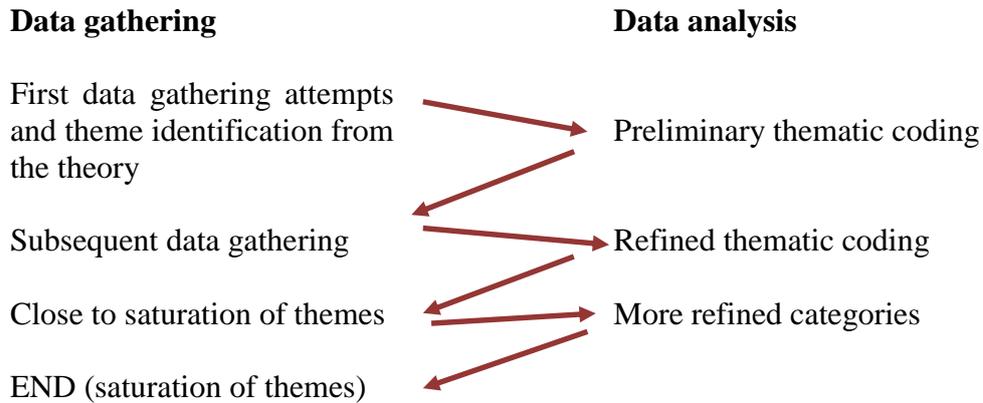
#### **4.2.2 Content classification and procedures**

The central problem of content analysis is in the data reduction process, which seeks to classify many words in the texts into much fewer content categories (Weber 1990). In this thesis, the classification was driven by theory. The deductive position was taken because the theory was essential to guide the design of the content analysis protocol by the way certain concepts are defined in the theory.

Based on the theories of ethics of care and corporate governance, the classification of words was done using thematic analysis, which includes the identification of themes, context and theoretical frameworks within which the research is conducted. The themes are identified using top-down coding, bottom-up coding or iterative coding (Bergman 2010). In top-down coding, the coding scheme is imposed by researchers on the texts; in bottom-up coding, relevant elements are identified inductively from the texts which will lead to a set of relevant themes; while in iterative coding, the coding is conducted iteratively between top-down and bottom-up coding.

Iterative coding was used in this thesis. The themes were defined first based on theory and then other themes were identified during the reading and analysing of the texts. The procedures aligned to an approach called “zigzag” (Rivas 2012). This approach began from identification of themes, through the ethics of care theory, to preliminary reading of the texts to inform further data gathering so that data gaps were filled or newly picked from the texts. The process ended when no new themes emerged from the data (this is called saturation of themes). The process is depicted in Figure 4.2.

**Figure 4.2 ‘Zigzag’ approach in the qualitative content analysis**



Source: Modified from Rivas (2012).

The procedures applied in this research were as follows:

1. The themes were identified and classified based on ethics of care principles. As has been explained in Chapter 2, the principles developed by Gilligan (1982) are:
  - a. care is achieved through perception of one's self as connected to others;
  - b. moral dilemmas are contextual;
  - c. dilemmas are solved through inductive thinking;
  - d. development through stages is sequential and hierarchical;
  - e. principle of moral responsibility is reflected in the voices of women; and
  - f. distinguished by an emphasis on attachments, issues of self-sacrifice and selflessness and consideration of relationships as primary.
2. Two more principles were added in this thesis based on the interpretation of the association of the ethics of care to the corporate governance area, as explained in Chapter 3. These are:
  - a. The nature of CSR activities should not only be mandatory or compulsory but, more importantly, voluntary or discretionary responsibilities (Carroll 1979). This is built on the ethics of care principle to maintain good relationships with stakeholders that goes beyond rules and regulations.
  - b. Paying more attention to women's interests. This can be translated into any policies that are "women friendly", such as work-life balance policies for employees, providing child-care facilities, supporting women employees in

reaching top management positions and empowerment of women in the community.

3. Including the two additional principles, there are eight basic principles contained in the qualitative content analysis protocol. These are:
  - a. care is achieved through perception of one's self as connected to others;
  - b. moral dilemmas are contextual;
  - c. dilemmas are solved through inductive thinking;
  - d. development through stages is sequential and hierarchical;
  - e. principle of moral responsibility is reflected in the voices of women;
  - f. distinguished by an emphasis on attachments, issues of self-sacrifice and selflessness, and consideration of relationships as primary;
  - g. the nature of the CSR activities should be voluntary or discretionary responsibilities; and
  - h. more attention is put on women's interests.
  
4. The first basic principle: achieved through perception of one's self as connected to others, represents stakeholder theory in business research. This argument is further elaborated using several sub-principles in accordance with stakeholder theory from the feminist perspective (Wicks, Gilbert and Freeman 1994). These sub-principles are as follows:
  - a. corporations are webs of relationships among stakeholders;
  - b. corporations should thrive on chaos and environmental change;
  - c. replace conflict and competition with communication and collective action;
  - d. strategy as solidarity; and
  - e. replace hierarchy with radical decentralisation and empowerment.
  
5. Based on the eight basic principles and preliminary readings of the sample's (BHP Billiton's) annual and sustainability reports, the themes for the qualitative content analysis were developed.

6. Several themes were developed by referring to Corporate Governance Principles and Recommendations (ASX 2007), especially Principle 3: Promote ethical and responsible decision making. The Principles and Recommendations set out recommended corporate governance practices for entities listed on the Australia Stock Exchange (ASX).
7. The rules or protocols to search for the disclosure of the themes in the reports were then developed, as depicted in Table 4.1.

**Table 4.1 Qualitative content analysis protocol**

<b>PRINCIPLES/ THEORY OF THE ETHICS OF CARE (1)</b>	<b>QUALITATIVE CONTENT ANALYSIS (Themes to be investigated in Annual Report and Sustainability Report) (2)</b>	<b>RULES/PROTOCOL (3)</b>
Care is achieved through perception of one's self as connected to others (Gilligan 1982).		<b>General Rule:</b> <ul style="list-style-type: none"> <li>- Read the reports carefully in their entirety to gain understanding of the information disclosed.</li> <li>- The reports examined are the Annual Reports and Sustainability Reports of BHP Billiton Limited.</li> </ul>
Corporations are webs of relationships among stakeholders. <i>'The corporation is constituted by the network of relationships which it is involved in with the employees, customers, suppliers, communities, businesses and other groups who interact with and give meaning and definition to the corporation.'</i> (Wicks, Gilbert and Freeman 1994).	<p>a. Company's vision and mission are in line with the ethics of care view of corporations as webs of relationships among stakeholders.</p> <p>b. Stakeholder is explicitly mentioned.</p>	<p>a. Read the company's vision and mission.</p> <p>b. Check whether the vision and mission are in line with the caring approach, (i.e. paying attention to stakeholders' interest).</p> <p>c. The company might not explicitly state its "vision" and "mission". In this case, the whole report should be read carefully. Other expressions may present: "critical success factor", "our approach", "our view", "we value", "corporate objective". All the expressions above are deemed as company's vision and mission statements.</p> <p>d. Compare the vision and mission statements for each year (2006-2011), note any differences or changes.</p> <p>a. Read the report to find the explanation of the stakeholder.</p> <p>b. State the stakeholders mentioned by</p>

<b>PRINCIPLES/ THEORY OF THE ETHICS OF CARE (1)</b>	<b>QUALITATIVE CONTENT ANALYSIS (Themes to be investigated in Annual Report and Sustainability Report) (2)</b>	<b>RULES/PROTOCOL (3)</b>
		company.
	<p>c. Detail of the company's responsibilities to shareholders and the financial community generally.</p>	<p>a. Read the “shareholders”, “investors”, and “financial community” section.</p> <p>b. Quote the responsibility in qualitative and quantitative terms.</p> <p>Look for any statements that seem to give priority to the shareholders, analyse the statement to find out whether the company is actually in a shareholder or stakeholder model of corporate governance. For example, a statement such as “We strive to deliver strong financial returns to shareholders” may seem to be an expression of shareholders’ maximisation objective. However, if later in other pages the company provides a statement such as “While we strive to deliver strong financial returns to shareholders, we fully recognise and deliver on our wider responsibilities to our stakeholders”, it means that the company is actually applying the stakeholder model.</p>
	<p>d. Specifications of the company's responsibilities to employees, customers, suppliers, creditors, consumers and the broader community.</p>	<p>a. Find the statement of responsibilities for each.</p>
	<p>e. Description of the company's approach to the community (including environmental protection policies, support for community activities and donation of sponsorship policies).</p>	<p>a. Read through the environment and community sections of the sustainability report to find descriptions.</p> <p>b. Compare the description from year to year to indicate improvements the company may have made in terms of:</p> <ol style="list-style-type: none"> <li>1. the number of programs exercised every year (including the launch of new programs);</li> <li>2. the amount spent every year;</li> <li>3. the quality of the program (such as involving the employees in community programs, and specific programs designed for specific issues).</li> </ol>
	<p>f. Outline of the company's employment practices.</p>	<p>a. Read through the employment section of the sustainability report to find the detail</p>

<b>PRINCIPLES/ THEORY OF THE ETHICS OF CARE (1)</b>	<b>QUALITATIVE CONTENT ANALYSIS (Themes to be investigated in Annual Report and Sustainability Report) (2)</b>	<b>RULES/PROTOCOL (3)</b>
		of description in terms of: <ol style="list-style-type: none"> <li>1. reference to OHS;</li> <li>2. policies on child workers;</li> <li>3. employment opportunity practices;</li> <li>4. special entitlements above the statutory minimum;</li> <li>5. employee security trading policies;</li> <li>6. training and further education support policy; and</li> <li>7. practices on drug and alcohol usage.</li> </ol>
	g. The company’s organisational structure support for the commitment to maintaining relationships.	<ol style="list-style-type: none"> <li>a. Investigate the disclosure of certain committees that might support the notion of company as a web of relationships, such as the existence of the audit committee and environmental or sustainable development committee.</li> <li>b. Analyse the roles played by the committee. For instance, does the audit committee play a role in assuring high-quality financial reporting and improving disclosure and accountability to society? Does the environmental or sustainable development committee enhance the company’s commitment to sustainable development, social accountability and transparency?</li> <li>c. Search for information on the frequency of meetings of those particular committees and compare from year to year.</li> </ol>
Corporations should thrive on chaos and environmental change. <i>‘Harmonious relationships with the fluctuating and dynamic business environment should be created, nurtured, and sustained, rather than conquered or controlled. Interdependence with other parties can emerge in patterns of</i>	<ol style="list-style-type: none"> <li>a. Sustainability/CSR is explicitly mentioned as applied.</li> <li>b. Description of sustainability challenges.</li> <li>c. The benefits of applying sustainability principles are mentioned.</li> <li>d. The explanation of social and environmental risk to which the company is exposed.</li> <li>e. The steps taken to mitigate the social and environmental risk are</li> </ol>	For each of these items: <ol style="list-style-type: none"> <li>a. Read the “sustainability” and “social and environmental risk” sections;</li> <li>b. Read through the description and diagram of company structure, if any;</li> <li>c. Compare year to year to indicate any changes in patterns of activities and risk.</li> </ol>

<b>PRINCIPLES/ THEORY OF THE ETHICS OF CARE (1)</b>	<b>QUALITATIVE CONTENT ANALYSIS (Themes to be investigated in Annual Report and Sustainability Report) (2)</b>	<b>RULES/PROTOCOL (3)</b>
<i>cooperation, joint ventures or global alliances</i> . (Wicks, Gilbert and Freeman 1994).	described.	
Replace conflict and competition with communication and collective action. <i>'Better to find win win situations where what initially appear to be conflict of interest among stakeholders can be turned into forms of collaboration and effective communication to resolve conflicts. Encouraging participation and collective action also helps validate decision making</i> '. (Wicks, Gilbert and Freeman 1994).	a. Statement of the measures the company follows to promote active compliance with legislation affecting its operations wherever it operates. b. Specification of how the company handles actual or potential conflicts of interest. c. The practices necessary to take into account the legal obligations and the reasonable expectations of stakeholders (shareholders, employees, customers, suppliers, creditors, consumers and the broader community).	a. Search for any statement that describes company's compliance to each country/site location (including compliance with the tax law, bribery rules, working conditions, and environmental protection law). b. Read the report to find any actual conflict of interest and the description of how the company solves it. c. Search for any statement indicating the potential conflict of interest (using the search tool) or if not mentioned, read thoroughly and analyse any parties that could bring potential conflict of interest. For example, if the company states that it plans to open a new site in the future, find any statements disclosed by the company indicating that it is aware of any potential conflict of interest. d. Search for any table that describes each stakeholder's interests and company's approach in managing the relationship with them. e. Search for the "legal" or "case" to find the legal obligations. f. Quote any description of legal obligation in qualitative and quantitative terms (such as the amounts of fines or legal costs). g. Analyse the approach taken to solve each legal case. h. Study the pattern of the legal obligations to find any improvement of the approaches the company has taken to solve them (such as reduced fines and more a communicative approach in dealing with prosecutors).
Strategy as solidarity. <i>'Where strategy as objectivity seeks to describe decision as</i>	a. Specifications of the company's responsibilities to employees, customers, suppliers, creditors,	a. Read through the company's strategies. b. Investigate whether the strategies are formulated using a solidarity among stakeholders framework.

<b>PRINCIPLES/ THEORY OF THE ETHICS OF CARE (1)</b>	<b>QUALITATIVE CONTENT ANALYSIS (Themes to be investigated in Annual Report and Sustainability Report) (2)</b>	<b>RULES/PROTOCOL (3)</b>
<p><i>dictated by the numbers or as business decisions, the feminist view of solidarity requires that managers make choices based on the responsibilities and relationships it has with specific stakeholders. Starting with solidarity requires that the use of scientific data be done in service of specific wants, that it not impede the ability to talk in terms of particular persons and their needs, and that the numbers or facts it produces can never dictate decisions’.</i> (Wicks, Gilbert and Freeman 1994).</p>	<p>consumers and the broader community.</p> <p>b. Specification of the strategy that company applies based on the responsibilities and relationships with specific stakeholders.</p>	
<p>Replace hierarchy with radical decentralisation and empowerment. <i>‘Company structure and division of labour are not completely abolished, but are put in the service of humanising work practices and increasing employee involvement and responsibility. By pushing for more decentralisation, the firm not only nurtures communication and interdependence among stakeholders,</i></p>	<p>a. Description of decentralisation and staff empowerment.</p>	<p>b. Study the organisational structure to determine whether the company applies a hierarchy or decentralisation structure.</p> <p>c. Read through the employee section and other sections that describe employee involvement and empowerment.</p>

<b>PRINCIPLES/ THEORY OF THE ETHICS OF CARE (1)</b>	<b>QUALITATIVE CONTENT ANALYSIS (Themes to be investigated in Annual Report and Sustainability Report) (2)</b>	<b>RULES/PROTOCOL (3)</b>
<p><i>it is able to draw more fully on the latent abilities and creativity of all. The worker benefits from more control and involvement in work, while the firm as a whole is better able to serve the interests of all stakeholders’.</i> (Wicks, Gilbert and Freeman 1994).</p>		
<p>Moral dilemmas are contextual (Gilligan 1982).</p>	<ul style="list-style-type: none"> <li>a. The practices necessary to maintain confidence in the company's integrity.</li> <li>b. A clear commitment by the board and senior executives to the code of conduct.</li> <li>c. Description of the means by which the company monitors and ensures compliance with its code.</li> <li>d. Description of the company's approach to any moral dilemmas.</li> </ul>	<ul style="list-style-type: none"> <li>a. Read the code of conduct.</li> <li>b. Investigate any moral dilemmas such as “business courtesies”, “bribes”, “facilitation payments”, “inducements” and “commissions”.</li> <li>c. Read through how the company maintains its integrity and approaches any moral dilemmas.</li> <li>d. Analyse whether the approach taken is a “contextual approach” (based on the situation, condition, specific case) and look for any statement of universal rules that are suggested by the ethics of justice as a complement to the ethics of care.</li> </ul>
<p>Dilemmas are solved through inductive thinking (Gilligan 1982).</p>	<ul style="list-style-type: none"> <li>a. Identification of the measures the company follows to encourage the reporting of unlawful or unethical behaviour.</li> <li>b. The responsibility and accountability of individuals for reporting and investigating reports of unethical practices.</li> </ul>	<ul style="list-style-type: none"> <li>a. Read and analyse the policy of “whistle-blower”, “unlawful” and “unethical” behaviour.</li> <li>b. Try to find any indication of strict rules for reporting and investigating it.</li> </ul>
<p>Development through stages is sequential and hierarchical (Gilligan 1982).</p>	<ul style="list-style-type: none"> <li>a. Identification of any sequential and hierarchical moral judgement, from an initial concern to self-survival and not to hurt others to an injunction to act responsibly towards self and others, and finally to sustain connection and</li> </ul>	<ul style="list-style-type: none"> <li>a. Study any policy or legal case that shows the sequential and hierarchical mode.</li> <li>b. Read them thoroughly to find if the sequential and hierarchical moral development actually exist.</li> </ul>

<b>PRINCIPLES/ THEORY OF THE ETHICS OF CARE (1)</b>	<b>QUALITATIVE CONTENT ANALYSIS (Themes to be investigated in Annual Report and Sustainability Report) (2)</b>	<b>RULES/PROTOCOL (3)</b>
	relationships with other parties.	
Principle of moral responsibility is reflected in the voices of women (Gilligan 1982).	a. The number of women executives. b. The number of women staff.	a. Read the employee section of the sustainability report that discloses the number of female staff and executives.
Distinguished by an emphasis on attachments, issues of self-sacrifice and selfishness and consideration of relationships as primary (Gilligan 1982).	a. The term "caring" and similar terms, which are related to the feminist ethics of care principles are used.	a. Search for "caring" or "care" b. Analyse what the company means by "caring", ignore any which is not related to the ethics of care.
The nature of the CSR activities should not only be mandatory or compulsory but also, more importantly, <b>voluntary, or discretionary responsibilities</b> (Carroll 1979)	a. Feminist CSR (genuine, beyond the obligatory one) is stated to be applied. b. Legitimacy (licence to operate) or similar is mentioned ( <i>represents the justice and care approaches that work together</i> ).	a. Read the CSR section of the sustainability report. b. Read the government rules and compare with the CSR activities to determine any initiatives beyond the obligatory one. c. Read the "legitimacy" or "licence" statement and analyse whether it is related to the ethics of justice.
Women's interests in the employee group and in other stakeholder groups are acknowledged. This can be translated into any policies that are "women friendly".	a. The policy regarding the family matters of women staff. b. Gender diversity policy. c. Gender equality for women as consumers, suppliers, investors, and as part of the community. d. Pictures of female manager and staff. e. Company's policies to remove the glass-ceiling phenomenon.	a. Investigate any policy on "work- life balance", "child-care", "flexible working hours", "gender diversity" and "gender equality". b. Investigate the policy of product design, development and marketing to a women's market. c. Study the community CSR initiatives that are related to women, supplier diversity policy and gender issues in investments. d. Study the pictures of women in the report: - count the number of pictures each year and compare; - study the pattern of women portrayed each year: career woman, traditional woman, young woman, etc. e. Investigate the company's policies to remove barriers to women's participation, such as:

<b>PRINCIPLES/ THEORY OF THE ETHICS OF CARE (1)</b>	<b>QUALITATIVE CONTENT ANALYSIS (Themes to be investigated in Annual Report and Sustainability Report) (2)</b>	<b>RULES/PROTOCOL (3)</b>
		1. sex discrimination from institutional factors; 2. sex-based differences in competencies and experience; 3. sex-based preferences in terms of working conditions; and 4. women’s lack of access to valuable social and financial networks and mentoring.

Source: developed by the author based on content analysis guidance provided by Krippendorf (2004) and Rivas (2012).

Based on the protocols identified above, the data were collected through the following steps:

- a. Preliminary reading of the entire reports was performed to gain understanding of the information disclosed.
- b. The documents were then read carefully to identify quotations that could be categorised into a certain theme(s). Some quotations were used for more than one theme.
- c. Certain theme(s) were added to quotations found to contain features of the ethics of care. This represented the “zigzag” approach adopted in this thesis.

#### **4.2.3 Reliability and validity**

Reliability is the degree of independence of the findings and validity is the degree of interpreting the findings in a defensible way (Kirk and Miller 1986). To measure the reliability, the coding of texts is assigned to multiple coders to see whether the coders can reliably apply the same codes and achieve the same results (Kohlbacher 2006).

In qualitative content analysis, several approaches similar to validity and reliability have been developed to assess the quality of the coding and analysis process. Lincoln and Guba (1985) suggested four criteria, as follows:

### 1. Credibility

Credibility is the equivalent of internal validity, seeking the identification of all important factors in the research question. The ways these factors are reflected in the data gathered are then described accurately and completely.

### 2. Transferability

Transferability or external validity is an evaluation of the applicability of findings from one context to another. This thesis involved the intensive study of a single setting (case study), which makes representativeness and external validity questionable as the breadth is sacrificed for depth of research. Seale (2012) provided justification for the reduced importance of external validity because the originality and discovery might be seen as indicators of the quality of qualitative research. This is expressed as theoretical generalisation, as a contrast to the “empirical generalisation” of statistical studies. It means that the importance of a newly discovered phenomenon can only be judged by referring to its contribution to some existing body of knowledge or theory. This “theorising” of an area of inquiry is achieved when the research findings are put in a relevant theoretical context.

### 3. Dependability

Dependability is the replicability and stability in findings after considering the rational and logical changes during repetitions of the study.

### 4. Confirmability

Confirmability or reliability in qualitative research findings is evaluated by looking at the data instead of the researcher(s) to determine if the conclusions are supported by the data. The reliability is achieved not in certain inter-rater numerical correspondence (between coders) but in conceptual consistency between observations and conclusions.

## **4.3 Quantitative optimisation method**

### **4.3.1 Optimisation and the linear programming approach**

Mathematical programming, also known as optimisation, is an approach to finding the best possible solution (the optimal or most efficient way) of using limited resources to achieve certain defined objectives. There are many types of optimisation models, one of

which is linear programming. If we want to use linear programming as a tool for financial decision making, then a firm's decisions must be formulated in a linear manner. The general form of the linear programming model (Lee, Lee and Lee 2009) is as follows:

Decision variables :  $x_1, x_2, \dots, x_n$   
 Objective function : Maximise (or minimise)  
 $Z = c_1x_1 + c_2x_2 + c_3x_3 + \dots + c_nx_n$   
 Constraints: subject to  
 $a_{11}x_1 + a_{12}x_2 + a_{13}x_3 + \dots + a_{1n}x_n \leq / = / \geq b_1$   
 $a_{21}x_1 + a_{22}x_2 + a_{23}x_3 + \dots + a_{2n}x_n \leq / = / \geq b_2$   
 .....  
 .....  
 $a_{m1}x_1 + a_{m2}x_2 + a_{m3}x_3 + \dots + a_{mn}x_n \leq / = / \geq b_m$   
 $x_j \geq 0 \text{ (} j = 1, 2, \dots, n \text{)}.$

There are three elements in optimisation problems: decisions, constraints and objective(s) (Ragsdale 2001). These are described as follows:

1. Decisions or variables in an optimisation problem might represent any decisions a company wants to make or achieve. They can represent the quantities of different products a company can choose to produce, or the amount of money to be lent or withdrawn from different accounts, or the quantities of products that minimise costs. The decisions are often represented by the symbols  $x_1, x_2, \dots, x_n$ .
2. Constraints represent the limited resources a company faces in its operation. There are three general ways to express the possible constraint relationships in an optimisation problem:

less than or equal to constraint:  $f(x_1, x_2, \dots, x_n) \leq b$   
 greater than or equal to constraint:  $f(x_1, x_2, \dots, x_n) \geq b$   
 equal to constraint:  $f(x_1, x_2, \dots, x_n) = b$

For instance, a company only has 2,000 labour hours in a production cycle to produce two products. In this case, the constraint is a less than or equal to 2,000 labour hours to ensure that the total labour used in production does not exceed the amount of available labour hours.

3. The objective(s) or goal(s) is considered by the decision maker to decide which course of action is best. It can be a maximisation or minimisation function; for instance, the maximum profit to be achieved with a product mix or the total costs of transporting products. The general format is:

$$\text{MAX (or MIN): } f(X_1, X_2, \dots, X_n)$$

This study used an optimisation approach to project the financial condition of a company. This approach was taken because it clearly incorporates the objectives statement of a company and the constraints that the company faces and, hence, it fits within the aim of this study. Specifically, this research used the linear programming method, which is a deterministic model, with assumptions that all controllable and uncontrollable variables are known.

#### **4.3.2 The use of the optimisation approach as a corporate planning model**

According to Shim and McGlade (1984), there are two planning model approaches: simulation and optimisation. Simulation models are mathematical representations of a company's operations or of the conditions in the external economic environment. The future implications of present decision making can be estimated by adjusting the values of controllable variables and assumed external conditions. Simulation models can take the form of probabilistic models, which incorporate probability estimates into the forecast sequence, or deterministic models, which do not use random or probabilistic variables. Optimisation models are used to identify the best decision given specific constraints.

Corporate financial modeling is commonly used in financial forecasting, pro forma financial statements, capital budgeting, merger and acquisition analysis, profit planning and other areas of corporate finance (Shim and McGlade 1984). In general, the corporate simulation models are used to:

1. evaluate alternative policies,
2. provide financial projections,

3. facilitate long-term planning,
4. make decisions,
5. facilitate short-term planning (Naylor and Schauland 1976).

This thesis used the optimisation model to provide financial projections of the condition of a company if the ethics of care principles are introduced into its financial system.

#### 4.3.3 The optimisation model: the existing vs. the feminist model

This study developed a quantitative financial optimisation model adapted from Carleton's (1970) linear programming model. This is referred to as the 'traditional' model because it was developed using the masculinist view of finance and accounting theory. Carleton's model is considered complete as it shows relationships between the four interrelated policy decisions: the investment decision, the dividend decision, the financing decision and the production decision, which is inherently embodied in the sales forecast ((Lee, Lee and Lee 2009). Carleton's (1970) model is depicted below.

**Table 4.2 Carleton's linear programming model**

#### I. Objective-Function

$$\text{MAX } \frac{Po}{No} = \sum_{t=1}^{T-1} \left[ \frac{D_t}{No(t+k)} - \frac{\Delta E_t^n}{No(t+k)^t (1-C)} \right] + \frac{P_t - \Delta E_t^n}{N_t(1+k)^t}$$

#### II. Constraints

##### A. Definitional constraints

$$AFC_t = ATP_t - Pfdiv_t - SA_t;$$

$$ATP_t = (1-\tau) \left\{ \pi_t + \Delta eA_t - \Delta aAa_t - \sum_{z=1}^Z i_z (L_{z,0} + C_{z,t}) - i_t \sum_{z=1}^Z \Delta DL_t \right\} + B_1 B_2 (I_t + \Delta eA_{t-1}) + (1-\tau) (\Delta aAa_t - \Delta eA_{t-1});$$

$$\pi_t = \pi_{0,t} + \sum_{s=1}^t \pi'_s (I_s);$$

$$I_t = \frac{\rho - C_0}{C_t} \left( 1 + \frac{\rho - C_0}{C_t} \right)^{t-1} A_0;$$

$$A_t = \left( 1 + \frac{\rho - C_0}{C_t} \right)^t A_0$$

---

*B. Sources and uses of funds constraints*

$$I_t = AFC_{t-1} - D_{t-1} + \sum_{z=1}^Z \Delta CL_{z,t} + \Delta DL_t + \Delta DTL_{t-1} + \Delta E_t^n$$

*C. Policy constraints*

1. Interest coverage

$$\frac{\Pi_t}{\sum_{z=1}^Z i_z(L_{z,0} + C_{z,t}) + i_t \sum_{s=1}^t \Delta DL_s} \geq X$$

2. Maximum leverage

$$\sum_{z=1}^Z j_z(L_{z,0} + C_{z,t}) + \sum_{t=1}^T \Delta DL_t \leq \left(\frac{S}{1+S}\right) A_t$$

3. Prefinancing limitation

$$\sum_{t=1}^T \Delta DL_t - \sum_{t=1}^{T-1} \Delta DL_t \leq I_t$$

4. Minimum dividend growth

$$D_t - \alpha_{t-1} \geq 0;$$

$$P_t - \Delta E_t^n \geq \frac{1}{\alpha_t} P_t$$

5. Payout restriction

$$D_t \geq \delta_1 AFC_t;$$

$$D_t \geq \delta_2 AFC_t$$

6. Cumulative payout restriction

$$\sum_{t=1}^T D_t - \delta \sum_{t=1}^{T-1} AFC_t \leq 0$$

---

**Table 4.3 Decision variables and list of parameters**

---

**I. Decision variable**

A. *Independent variables of the objective function*

$D_t$  = total dividends paid by the firm in period  $t$ ;

$\Delta E_t^n$  = net funds received from equity issued in period  $t$

B. *Constraint variables*

$AFC_t$  = Available for common funds;

$\Delta DL_t$  = change in long-term debt in period  $t$ ;

---

---

## II. List of parameters

### A. Accounting parameters

$C$  = an estimate of the proportion of equity lost to under-pricing and transaction costs;

$No$  = number of ordinary shares outstanding;

$ATP_t$  = after tax profits;

$Pfdiv$  = preferred dividends;

$\pi_t$  = period's EBIT;

$\Delta_e$  = stockholder report depreciation rate of assets;

$A_t$  = total net assets;

$Aa_t$  = tax report assets;

$L_{z,0}$  = initial amount in liability account  $z$ ;

$C_{z,t}$  = known cumulative in  $L_{z,0}$  as a result of prearranged loan "take-down" amortisation schedule, etc.,  $C_{z,t} = \sum_{\tau=1}^t CL_{z,\tau}$ . It includes expansion of trade credit and payment of long-term debt through sinking funds;

$\Delta CL_z$  = change in  $C_{z,t}$ ;

$I_t$  = net investment;

$X$  = minimum acceptable interest coverage;

$S$  = maximum debt/equity ratio;

$\pi_{0,t}$  = known profit at time  $t$  associated with the firm's initial stock of assets  $A_0$ ;

$\Delta DTL_{t-1}$  = change of deferred corporate income tax.

### B. Financial parameters and definitions

$k$  = the appropriate discount rate;

$SA_t$  = Special Adjustments;

$\Delta a$  = tax-reported accelerated depreciation;

$\alpha_t = 1 +$  the minimum dividend growth rate;

$\delta_1$  = lower-bound payout ratio;

$\delta_2$  = upper-bound payout ratio;

$\mathcal{D}$  = cumulative payout restriction;

$\rho$  = internal rate-of-return per period earned on  $I_1$  (Growth Profit Margin as a proxy);

$D_0$  = total dividend payments in period zero;

$P_0$  = theoretical equity value in period zero.

### C. Economic parameters

$\tau$  = corporate tax rate;

$i_z$  = interest rate of  $z^{\text{th}}$  liability;

---

---

$i_t$  = interest rate for new long-term debt in year  $t$ ;  
 $B_1$  = investment tax credit rate;  
 $B_2$  = proportion of firm's assets on which investment tax credit is applicable;  
 $C_0$  and  $C_1$  = production function parameters associated with  $\rho_s = C_0 + C_1 \frac{I_s}{A_{s-1}}$  ( $C_0 > 0, C_1 < 0$ )  
 $P_t$  = aggregate market value of the firm's equity at the beginning of period  $t$   
 ( $t = 0, 1, 2, \dots, T$ );  
 $N_t$  = number of common shares outstanding in period  $T$ .

---

Source: (Lee, Lee and Lee 2009).

The objective function in Carleton model (1970) is maximising the shareholder wealth, represented by a proxy-share price which, in this model, is valued using the stream-of-dividends approach. The constraints represent both company policies and accounting relationships to define the maximum valuation of share price possible under the various realities faced by a company. After the linear program model and solution of the problem are completed, the pro-forma financial statements can be constructed to illustrate the implications of the particular solution variables at the company level.

As the feminist ethics of care was used in this thesis, the development of a feminist model is guided not only by the finance and accounting theory but also by the ethics of care theory and principles. Hence, the objectives and constraints should represent the principles inherently contained in the ethics of care theory.

The modification of Carleton's model (1970) using the ethics of care is explained in detail in Chapter 6. The objective function in the proposed model is the economic value retained concept, which is an economic performance indicator in the Sustainability Reporting Guidelines advised by the GRI. This is defined as the direct economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments and payments, to capital providers and governments.

As linear programming is a mathematical technique, discretion and judgement were applied to find the solution and construct the pro-forma financial statements. Analysis

was then performed to evaluate the company's financial performance if the ethics of care principles are applied. It should also be noted that as a mathematical model, not all reality can be captured in the optimisation model. It is sufficient to treat it as a tool for decision making processes instead of as a substitute for the process itself.

#### **4.4 Research design**

##### **4.4.1 Mixed methods**

A mixed method focuses on collecting, analysing and mixing both quantitative and qualitative data in a single study, or series of studies, to provide a better understanding of research problems than a single approach alone (Leckenby and Hesse-Biber 2007). Both data types can be collected in phases (sequentially) or at the same time (concurrently). As has been mentioned previously, even though feminist research is usually associated with the qualitative research method, feminist researchers do not limit themselves to using this method entirely. Harding (1987) argued that 'it is not by looking at research methods that one will be able to identify the distinctive features of the best of feminist research' (p.3). Furthermore, feminist scholars argue that both qualitative and quantitative methods are only differing modes to understanding social phenomena; none of them is inherently superior to the other (Campbell and Schram 1995).

Within the context of an inclusive viewpoint on methods, the appropriate use of both qualitative and quantitative approaches as feminist research tools depends on which method can best answer particular research questions. The methods employed must be consistent with broad feminist values, goals and ideology. In this thesis, the qualitative content analysis method was used to answer the research question: What are the corporate governance practices applied in a sample company from the feminist ethics of care perspective? The quantitative optimisation method is used to answer the research question: How is the financial condition of the company affected if the feminist ethics of care is applied in its corporate governance practices? Both methods are used under the feminist ethics of care framework.

In mixed methods, the following procedures are undertaken:

- a. collect and analyse both qualitative and quantitative data based on research question(s);
- b. mix or integrate the two types of data concurrently by combining them, or sequentially by having one build on the other, and in a way that gives priority to one or to both;
- c. use these procedures in a single study or in multiple phases of a study;
- d. frame the procedures within a philosophical paradigm and a theoretical lens; and
- e. combine the procedures into the specific research design of a study.

In this thesis, qualitative and quantitative data were analysed sequentially, with qualitative data analysed first. This information gathered through the qualitative data was then used to build a quantitative model.

#### **4.4.2 Sample selection**

This research centres on a case study of one particular company in Australia. As a method of studying social phenomena through the thorough analysis of an individual sample, the case study approach is designed to look for specificity and exceptions rather than generalisations. Some feminist researchers found that the emphasis on generalisations in social science has obscured phenomena important to particular groups, including women (Reinharz 1992). This happens because the research on women may result in specific and unique findings that might be different from other groups. Therefore, the case study approach was chosen in this thesis to study the ethics of care, rooted in women's psychological feelings and experience.

The case study evidence in this thesis was based on documentation (investigation of annual and sustainability reports). While the documentation brings several strengths as it can be viewed repeatedly and unobtrusively, it also possesses weaknesses. For example, reporting bias that reflects the (unknown) bias of the author can be difficult to find or access and biased selectivity remains an issue if the collection of documents is incomplete (Hesse-Biber and Leavy 2011).

Since regulatory environments exist at national levels (La Porta et al. 2000), the first step in the sample selection involved the selection of a country from where the case study company would be chosen. The criteria of sample selection at country level are as follows:

1. The country had major corporate collapses that have driven the enactment of new rules and regulations or the confounding effects are spread to other countries. This criterion was specified since this project focused on the feminist ethical perspective rather than gender issues (such as the number of females in boards or executive positions in any particular country); therefore, the most relevant criterion is ethical matters.
2. The country has applied the International Financial Reporting Standards (IFRS) for the period of research, to omit the unnecessarily complicated task of converting financial statements based on local accounting standards to international standards. This criterion was also significant as the world is now in a phase of IFRS convergence, making the contribution of this research up to date with the current trend.
3. The country was predicted to apply the agency theory of corporate governance; hence, the feminist stakeholder theory used in this study was expected to improve the theory for corporate sustainability purposes.

There are many countries that satisfy these criteria but Australia was chosen to gain more understanding of this country. The company chosen as a sample needed to be a public company with wide and significant social responsibility and with no problems relating to data accessibility for the purpose of this research.

Considering the criteria presented above, BHP Billiton was selected as the sample company for this study. It was also selected on the basis that the data needed for this study had been disclosed comprehensively by the Company. In addition, BHP Billiton has been awarded several Sustainability Reporting Awards, making it a world leader in this field of disclosure. More specifically:

1. BHP Billiton received the Corporate Governance Reporting Award in the Australasian Reporting Awards 2012 and 2013. This indicates the completeness of information provided by BHP Billiton in the corporate governance area, one of the foci of this thesis.
2. As a multi-national and one of the world's largest diversified resources companies, BHP Billiton has broad and significant social responsibility. A study on whether the Company has fulfilled the responsibility ethically from feminist ethics of care perspective will therefore expand our knowledge in this area.
3. As a company with wide and significant social responsibility, BHP Billiton faces the challenges of maintaining its relationships with stakeholders. It was considered interesting to study how the Company manages its various stakeholders from the feminist ethics of care perspective.

Even though generalisability is not the main objective of this research (because of the case study design), considering the multi-national operations of BHP Billiton, the findings of this thesis are not restricted to the Australian context alone.

#### **4.4.3 Data sources and collection**

In this research, secondary data were used and collected from annual and sustainability reports, including financial statements and Australian macro-economic data from relevant sources. Other data from newspapers and magazines were also collected for further investigation on certain cases of corporate governance practices. A six-year period from 2006 to 2011 was chosen as it represents the latest period within the scope of this thesis writing. As already discussed, the information disclosed in the 2006-2011 reports was studied using the qualitative content analysis. The financial information during the period was then used as a basis to project the financial condition of the sample company using the quantitative optimisation method.

The heavy reliance on secondary sources is decided on the basis of the easiness of access. For the qualitative analysis, the reliance on secondary data from annual and sustainability report is decided for further investigation of corporate governance practices that have been disclosed by BHP Billiton. For certain cases, the disclosure is

compared to those reported in mass media to gain a more objective perspective from other sources. For the quantitative analysis, the reliance on secondary data is chosen to develop the financial modelling from publicly available accounting data.

#### **4.4.4 Research approach**

This study involved two significant parts designed to answer two research questions and give support for, or reject, two propositions. These parts were:

1. Part 1: the qualitative content analysis was conducted to analyse the corporate governance practices from the feminist ethics of care point of view.
2. Part 2: the quantitative optimisation model was developed and simulation was performed to determine the financial condition of the sample company. The performance analysis was done using four performance ratios: liquidity, activity, financial solvability, and profitability ratios.

#### **4.4.5 Method of analysis**

The qualitative content analysis was integrated into coding as new themes emerged during the coding process. The results could be presented using numbers and/or percentages or in graphic and tabular forms. This then allowed for the crucial further step of giving interpretations to the patterns found. The text provided a narrative of findings with quotations to illustrate the results and conclusions (White and Marsh 2006).

For the quantitative optimisation method, the linear programming problems were solved using the optimisation tool called “Premium Solver”. It was used as it could accommodate the linear programming model that was developed for this investigation. Premium Solver can quickly identifies the value of factors or decision variables to meet specific objectives or goals subject to certain constraints. The decision to use Premium Solver was made *after* the completion of the modelling process. After the results were obtained, the interpretation and analysis was conducted using finance and accounting knowledge, including financial ratios.

## CHAPTER 5 QUALITATIVE CONTENT ANALYSIS

### RESULTS AND DISCUSSION

*....mining is a spatial context traditionally gendered as masculine*

(Mayes and Pini 2010, p. 233)

#### **5.1 A brief description of BHP Billiton**

This chapter presents the results of the qualitative content analysis of a sample company. The case study was developed by analysing the annual and sustainability reports of BHP Billiton from 2006 to 2011. Before presenting the results and discussion, a brief description of this company is provided.

As stated on the Company website ([www.bhpbilliton.com](http://www.bhpbilliton.com)), BHP Billiton was formed as a result of a merger between Broken Hill Propriety (BHP) and Billiton. The two, small, mining companies were founded in the mid-1800s. The history of the Billiton can be traced back to 1860 when it was a tin mine on a little known island in Indonesia, Billiton (Belitung) island. BHP's history began in a silver, lead and zinc mine in Broken Hill, Australia. Incorporated in 1885, BHP engaged in the discovery, development, production and marketing of iron ore, copper, oil and gas, diamonds, silver, lead, zinc and a range of other natural resources. BHP was also a market leader in value-added flat steel products. Billiton became a global leader in the metals and mining sector and a major producer of aluminium and alumina, chrome and manganese ores and alloys, steaming coal, nickel and titanium minerals. Billiton also developed a substantial and growing copper portfolio.

BHP and Billiton merged in June 2001 to become one of the world's largest diversified resources companies. It now has significant positions in major commodity businesses including aluminium, energy coal and metallurgical coal, copper, manganese, iron ore, uranium, nickel, silver and titanium minerals and substantial interests in oil, gas, liquefied natural gas and diamonds. The group is headquartered in Melbourne, Australia, and consists of the BHP Billiton Limited Group and the BHP Billiton Plc Group as a combined enterprise, following the completion of the Dual Listed Company

(DLC) merger. BHP Billiton Plc is located in London, UK. BHP Billiton Limited and BHP Billiton Plc have each retained their separate corporate identities and maintained their separate stock exchange listings. However, they are operated and managed as a single unified economic entity, with their boards and senior executive management comprising the same people. Shareholders in each company have equivalent economic and voting rights in both companies. BHP Billiton Limited has a primary listing on the Australian Securities Exchange (ASX) in Australia while BHP Billiton Plc has a premium listing on the London Stock Exchange (LSE) in the UK and a secondary listing on the Johannesburg Stock Exchange (JSE) in South Africa.

In 2010, BHP Billiton celebrated its 150<sup>th</sup> anniversary and three significant milestones: Billiton's establishment on 28 October 1860, BHP's incorporation on 13 August 1885 and BHP Billiton's listing on the Australian and London Stock Exchanges on 29 June 2001. By building on the past and combining the assets of each company with the very best of its skills and people, BHP Billiton strives to continue to lead the resources industry into the future.

These are the statements of purpose and strategy of BHP Billiton as stated on its website and within its reports:

Our purpose is to create long-term shareholder value through the discovery, acquisition, development and marketing of natural resources.

Our strategy is to own and operate large, long-life, low-cost, expandable, upstream assets diversified by commodity, geography and market. This strategy means more predictable business performance over time which, in turn, underpins the creation of value for our shareholders, customers, employees and, importantly, the communities in which we operate.

<http://www.bhpbilliton.com/home/aboutus/ourcompany/Pages/Charter.aspx>

Twenty-first century issues associated with the licence to operate, corporate integrity, and sustainability were introduced to BHP Billiton by Paul Anderson, the Chief Executive Officer (CEO) in 1998-2001, through his March 1999 hand-written charter entitled “Moving into the 21<sup>st</sup> Century” (Thompson and Macklin 2009).

BHP Billiton provides a number of public social and environmental reports in hard copy and electronic form. It was awarded the Best Sustainability Report Award in the ACCA

(Association of Chartered Certified Accountants) Australia and New Zealand Sustainability Reporting Awards 2008, announced in August 2009.

## **5.2 Results and discussions from the qualitative content analysis**

The research question: What are the corporate governance practices applied in a sample company from the feminist ethics of care perspective? as discussed in Chapter 4 guided the qualitative analysis of the content of BHP Billiton's sustainability and annual reports. The research question does not imply a claim that the Company has followed the feminist ethics of care in its corporate governance practices. Rather, such practices were studied using the lens of the ethics of care.

The findings were structured based on the principles of the feminist ethics of care, which have already been discussed in Chapter 2. In brief, the principles are:

1. Achieved through perception of one's self as connected to others.
2. Moral dilemmas are contextual.
3. Dilemmas solved through inductive thinking.
4. Development through stages is sequential and hierarchical.
5. Principle of moral responsibility is reflected in the voices of women.
6. Distinguished by an emphasis on attachments, issues of self-sacrifice and selfishness and consideration of relationships as primary.

In addition to findings based on those principles, other relevant results are also presented and discussed (i.e. the voluntary nature of CSR activities, the acknowledgment of women's interests, and the social and environmental risks).

To improve the reliability of the thematic analysis, the use of multiple coders in the content analysis process was performed. There were no major discrepancies found in the data extraction consistency. The reliability in terms of conceptual consistency was then conducted by ensuring that the correspondence between observations and conclusions was achieved.

### **5.2.1 Principle number 1: achieved through perception of one's self as connected to others**

As a principle, the perception of connection to others was translated into several sub-principles in corporate setting, as explained in Chapter 3. The translations were based on Wicks, Gilbert and Freeman's (1994) interpretation of the stakeholder concept from a feminist perspective.

#### **Sub-principle (a): Corporations are webs of relationships among stakeholders**

Stakeholders are defined as 'people who are adversely or positively impacted by our operations, those who have an interest in what we do, or those who have an influence on what we do' (2006 Sustainability Report, p. 109). They are explicitly mentioned in the Company's annual and sustainability reports, along with the approach taken to engage with them. The Company's stakeholders are:

- investment community,
- shareholders,
- customers,
- media,
- business partners,
- employees and contractors,
- local and indigenous community,
- industry associations,
- suppliers,
- governments and regulators,
- non-government organisations, and
- labour unions.

These stakeholders are engaged through an effective "stakeholder relationships program" which is crucial to BHP Billiton in order to:

1. Maintain the licence to operate
2. Ensure access to resources and future business opportunities
3. Enhance and protect the corporate reputation
4. Mitigate potential social, environmental and business risks. (2007 Sustainability Report, p. 245)

Furthermore, BHP Billiton states that its success in creating value is when:

- *our shareholders are realising a superior return on their investment*
- *our customers and suppliers are benefiting from our business relationships*
- *the communities in which we operate value our citizenship*
- *every employee starts each day with a sense of purpose and ends each day with a sense of accomplishment.* (2006 Sustainability Report, p. 4)

The consideration of relationships as primary to the feminist ethics of care is reflected in BHP Billiton’s stakeholder relationships, which are performed through regular and transparent communication. This is explained as follows:

*We engage regularly, openly and honestly with our host governments and people affected by our operations and take their views and concerns into account in our decision-making ... Engaging openly with our host communities, governments and other key stakeholders is critical if we are to make a positive contribution to the lives of people who live near our operations and to society more broadly. Only through meaningful engagement are we able to understand and address potential impacts and concerns about our projects and operations and create opportunities that are aligned with the interests of the affected people.* (2011 Sustainability Report, p. 18)

The excerpt from the 2011 Sustainability Report shows the open and honest engagement BHP Billiton has with its stakeholders. The stakeholder relationships are maintained through the stakeholder engagement method, as depicted in Table 5.1.

**Table 5.1 The stakeholder engagement method**

<b>Stakeholder</b>	<b>Interest</b>	<b>Engagement methods</b>
<b>Investment community</b> includes mainstream financial analysts, socially responsible investment (SRI) analysts, and corporate governance analysts.	These analysts are located globally and assess whether BHP Billiton’s performance closely aligns with shareholder interests, including delivering good financial returns and demonstrating strong group performance and governance. Increasingly, non-financial performance is also of interest; elements of this include improved governance mechanisms and non-financial risks and their mitigation.	<ul style="list-style-type: none"> <li>• regular communications to mainstream investment organisations, SRI analysts and corporate governance analysts;</li> <li>• analyst briefings on key issues (subject to applicable laws), including briefings for SRI and mainstream analysts with a particular interest in environmental and social performance, and dialogue on key sustainability issues with a range of stakeholders, including the SRI and mainstream investment community;</li> <li>• printed reports (Annual Report, Sustainability Report);</li> <li>• participation in external bench-marking initiatives.</li> </ul>
<b>Shareholders</b> are a diverse group, with significant	The creation of long-term shareholder value through a combination of	<ul style="list-style-type: none"> <li>• Annual General Meetings;</li> <li>• regular printed and electronic communications;</li> </ul>

Stakeholder	Interest	Engagement methods
representation in Australasia, Europe, South Africa and North America.	consistent financial returns and high-quality governance; continuous improvement and the understanding of shareholders' concerns.	<ul style="list-style-type: none"> <li>• regular meetings with institutional shareholders and investor representatives;</li> <li>• access to all investment community presentations via website <a href="http://www.bhpbilliton.com">www.bhpbilliton.com</a></li> </ul>
<b>Customers</b> are generally other large organisations.	Typically focused on reliability and supply; product quality, cost and delivery; the full life-cycle impacts of products and the downstream products made using BHP Billiton materials; materials and resource efficiency and the management of final waste materials.	<ul style="list-style-type: none"> <li>• regular communications with BHP Billiton marketing;</li> <li>• technical support to assist with product use, either in terms of process efficiency or product handling;</li> <li>• product information, including material safety data sheets;</li> <li>• visits to operations;</li> <li>• technology exchanges with operations;</li> <li>• participation in a range of stewardship initiatives, such as the Responsible Jewellery Council and the World Nuclear Association Uranium Stewardship Working Group.</li> </ul>
<b>Media</b> includes representatives from print, online and broadcast media.	A broad range of issues reflecting all stakeholder interests.	<ul style="list-style-type: none"> <li>• media releases, briefings, presentations and interviews.</li> </ul>
<b>Business partners</b> include those organisations with joint venture arrangements.	Interested in ensuring that suitable governance mechanisms are in place, financial returns are delivered and that risks are sufficiently mitigated.	<ul style="list-style-type: none"> <li>• via joint venture boards and operating committees;</li> <li>• printed reports (Annual Report, Sustainability Report);</li> <li>• joint venture partner participation in Health, Safety, Environment and Community (HSEC) audit programs.</li> </ul>
<b>Employees and contractors</b> located in more than 25 countries.	Matters concerning the health and safety of the employees and colleagues, working conditions and career development opportunities. For employees and contractors who reside near the operations, it is common for any prevailing local issues, such as employment opportunities, business creation, social infrastructure, schooling and health care, to be shared with local communities. In many remote communities,	<ul style="list-style-type: none"> <li>• regular performance reviews and employee perception surveys;</li> <li>• direct communication with employees through immediate supervisors and management;</li> <li>• operation-based newsletters and general communications;</li> <li>• BHP Billiton intranet;</li> <li>• asset and operation-based sustainability reports;</li> <li>• Business Conduct Advisory Service;</li> <li>• participation in HSEC performance improvement initiatives at their own operations.</li> </ul>

Stakeholder	Interest	Engagement methods
	housing, basic services and amenities are key to employee attraction and retention.	
<b>Local and Indigenous communities</b>	Potential environmental and social impacts associated with company's operations. A focus is to ensure opportunities are optimised (e.g. maintaining sustainable community development opportunities after a mine closure). Results from stakeholder perception surveys, regularly conducted by operations, rate local employment and business creation, support for social infrastructure and programs, a desire for improved community engagement mechanisms and improved environmental performance as local communities' most important interests and concerns.	<ul style="list-style-type: none"> <li>• community consultation and engagement groups;</li> <li>• participation in BHP Billiton activities;</li> <li>• newsletters and targeted communications;</li> <li>• community perception surveys;</li> <li>• support through local foundations (e.g. in Chile, Peru, Colombia and Mozambique);</li> <li>• other operation-specific engagements developed as part of operation community relations plans.</li> </ul>
<b>Industry associations</b> include commodity-specific associations, as well as sector-specific associations, at national and international levels.	A diverse range of issues relating to the sector or commodity, such as environmental legislation, safety standards and promotion of leading practice	<ul style="list-style-type: none"> <li>• BHP Billiton engages with this group through ongoing representation on specific committees and engagement during specific projects with industry associations, both nationally and internationally, such as the Minerals Council of Australia and the International Council on Mining and Metals.</li> </ul>
<b>Suppliers</b> include local businesses as well as large international suppliers.	Supply agreements, payment processes and required supplier standards.	<ul style="list-style-type: none"> <li>• in addition to a review of zero-tolerance requirements across suppliers, BHP Billiton performs a supplier segmentation based on HSEC and business conduct requirements. Based on this segmentation, they define the appropriate engagement throughout the supplier life cycle.</li> </ul>
<b>Governments and</b>	National, regional or local	<ul style="list-style-type: none"> <li>• group representatives attend selected</li> </ul>

Stakeholder	Interest	Engagement methods
<p><b>regulators</b> at local, regional, national and international levels.</p>	<p>legislative and regulatory policy frameworks for the natural resources sector through the full project life cycle. They are also interested in market access, product stewardship, environmental performance, social policy and fiscal regimes applicable to the resources sector.</p>	<p>events, such as political party conventions, for the purpose of better understanding the implications of public policy development on business operations;</p> <ul style="list-style-type: none"> <li>• employees may participate in political processes as individuals, provided it is made clear that in doing so they are not representing BHP Billiton;</li> <li>• BHP Billiton will express its views to governments on subjects that affect the group's interests and operations. This must be done in a manner that adheres to high standards of ethics and complies with the letter and spirit of the law;</li> <li>• BHP Billiton will not make political contributions in cash or in-kind anywhere in the world and will not participate directly in the activities of political parties.</li> </ul>
<p><b>Non-government organisations</b> include environmental, social and human rights organisations at local, national and international levels.</p>	<p>Ethical, social and environmental performance of existing operations, proposed operations or closed operations. These stakeholders are increasingly interested in non-financial performance, such as better governance mechanisms and non-financial risks and mitigation.</p>	<ul style="list-style-type: none"> <li>• each operation identifies relevant local non-government organisations (NGOs) and includes mechanisms for engagement with them within the asset's community engagement plan;</li> <li>• at the corporate level, BHP Billiton regularly engage with relevant national and international organisations. The Forum on Corporate Responsibility (FCR) includes leaders from a number of NGOs, including WWF Australia, Oxfam Australia, Alliance for Responsible Mining (Colombia), International Alert (UK) and Centre for Social Markets (India). The FCR meets twice a year and is chaired by the company's CEO.</li> </ul>
<p><b>Labour unions</b></p>	<p>The types of issues that are raised by unions include workers' rights and interests, collective bargaining opportunities, health and safety matters, remuneration, working hours and roster arrangements.</p>	<ul style="list-style-type: none"> <li>• direct communication with unions as required. BHP Billiton respects the rights of all employees to freely choose to join labour unions and has a mix of collective and individual work arrangements at the operations. Prospective employees are made aware of employment arrangements prior to joining the group.</li> </ul>

Source: 2011 BHP Billiton's Sustainability Report, p. 3.

Despite this explanation of its stakeholder engagement model, the “stakeholder web relationships” are not explicitly stated in the corporate objective for the period 2009-

2011. In the 2006-2008 reports, the Company stated its corporate objective in a “neutral” or general fashion followed by the statement of responsibilities to stakeholders in the Sustainable Development Policy section, as quoted below:

*BHP Billiton’s corporate objective is to create long term value through the discovery, development and conversion of natural resources and the provision of innovative customer focused solutions. (2006 Sustainability Report, p. 189; 2007 Sustainability Report, p. 36; 2008 Annual Report, p. 125)*

*While we strive to deliver strong financial returns to shareholders, we fully recognise and deliver on our wider responsibilities to our stakeholders: as the Policy states ‘ our objective is to be the Company of choice – creating sustainable value for our shareholders, employees, contractors, suppliers, customers, business partners and host communities.’ (2006 Sustainability Report, p. 199; 2007 Sustainability Report, p. 112; 2008 Sustainability report, p. 46)*

The “quite clear” statements of the stakeholders’ objective in 2006-2008 reports are totally different from those in the 2009-2011 reports. In the latter period, the Company explicitly stated their objective toward their shareholders as follows:

*Our corporate objective is to create long-term value for shareholders through the discovery, development and conversion of natural resources, and the provision of innovative customer and market-focused solutions. (2009 Annual Report, p. 5; 2010 Sustainability Report, p. 4 with slightly different words; 2011 Annual Report, p. 5 with slightly different words)*

The responsibilities to other stakeholders were still outlined in the 2009-2011 reports, even though they are not explicitly mentioned in the corporate objective. Based on the substance of the report presentations, it is argued that the Company did not move away from the stakeholder notion, but the exclusion of other stakeholders in its corporate objective remains questionable.

The relationships maintained with stakeholders were also reflected in the Company’s vision and mission, which are in line with the ethics of care principles. The vision also took into account the ethical perspective that leads to sustainable development, as outlined in the following quotes:

*BHP Billiton’s corporate objective is to create long term value through the discovery, development and conversion of natural resources and the provision of innovative customer focused solutions. In pursuing this objective we have committed to the highest level of governance and strive to foster a culture that values and rewards exemplary ethical standards, personal and corporate integrity and respect for others. We consider this fundamental to our commitment to sustainable development. We also believe that*

*there is a link between high-quality governance and the creation of value. (2006 Sustainability Report, p. 189)*

*For BHP Billiton, sustainable development is about ensuring our business remains viable and contributes lasting benefits to society through the consideration of social, environmental, ethical and economic aspects in all that we do. Working through complex operational issues associated with our operations has highlighted environmental and social performance as a critical success factor for the Company. We are well aware of the costs of getting it wrong; but, more importantly, we recognise the value that can be created by getting it right. Consequently, we adopt a holistic approach to business strategy, seeking to realise value for our stakeholders through a sustainable business philosophy ... Line managers have ultimate accountability for ensuring our businesses contribute to sustainable development. (2011 Sustainability Report, p. 45)*

Three groups of stakeholders are substantially represented in the annual and sustainability reports. They are the shareholders, employees and the environment and community.

BHP Billiton's responsibilities to its shareholders, investors and the financial community generally are explicitly and completely explained in both the annual reports and sustainable reports 2006-2011. The responsibilities include, but are not limited to, ensuring the right to vote on important matters; providing return in dividends and capital returns; creating long-term shareholder value by implementing strategies of investment in large, high-quality assets that deliver growth and superior margins throughout the economic cycle; and maintaining the highest standards of disclosure. The responsibilities to the shareholders represent BHP Billiton's commitment to the creation of long-term value not only related to dividend distribution but also to the good governance practices.

For employees, the Company also clearly stated its responsibilities in both annual and sustainability reports. These responsibilities include developing the employees' skills and capabilities through regular performance reviews combined with adequate training and development programs; providing local employment with recruitment standards; facilitating opportunities for employees to assist others through arrangements such as the Matched Giving Program; developing and maintaining a diverse workforce and provide a work environment in which every employee is treated fairly and with respect. BHP Billiton also prohibits the use of child labour and forced labour at the Company's operations. In the 2009 Sustainability Supplementary Report, it is stated that children

must not be hired before completing their compulsory education. The minimum age for entry into employment must be 15 years old. Employee attraction and retention are recognised as fundamental to the Company’s success and are addressed through effective development and training programs, attractive remuneration packages, work-life balance initiatives and providing a fair and non-discriminatory work environment. The conducive work environment results in low turnover rates (11.08% on average), as illustrated in Table 5.2, which shows employees’ satisfaction with working conditions.

**Table 5.2 Employee turnover rate 2006-2011**

<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
7.3%	12%	14%	15.5%	8.9%	8.8%

Source: BHP Billiton’s Sustainability Report for the year 2006-2011.

The Company’s approaches to the environment and community stakeholder group manifest through various channels and efforts. These include biodiversity protection, voluntary community programs, collaboration with governments, NGOs and academic institutions worldwide to undertake and support research on improving sustainability performance, emissions management, recognition of indigenous people’s culture, heritage and traditional rights, and acknowledgement of the risks of climate change and the need for accelerated action to stabilise greenhouse gas concentrations at acceptable levels.

BHP Billiton once stated that it adopts a rights-based approach that is implemented by the people, rather than for the people, and requires significant skills and resources. This approach places much of the decision making in the hands of individuals or groups within the community. From the ethics of care perspective, the rights-based approach also means caring for people, as BHP Billiton seeks to empower people by implementing participatory and sustainable community development. One of the outcomes of these community approaches is a decrease in community complaints, as illustrated in Table 5.3. BHP Billiton has also committed to preserving the environment and, since 2008, has focused on integrating environmental responsibility directly into each activity in its operations.

**Table 5.3 The number of community complaints and environmental spending**

	2006	2007	2008	2009	2010	2011
<b>Community complaints</b> (noise-related issues are the most common)	603	543	536	377	232	194
<b>Environmental spending</b> , including R&D costs, site rehabilitation, environmental monitoring, and other expenditure such as environmental impact assessment and training ( <b>US\$ million</b> )	309	288	These expenditures are no longer reported as the Company's focus on integrating environmental responsibility into all activities means that it is not possible to accurately extract expenditure on the environment.			

Source: BHP Billiton's Sustainability Report for the year 2006-2011.

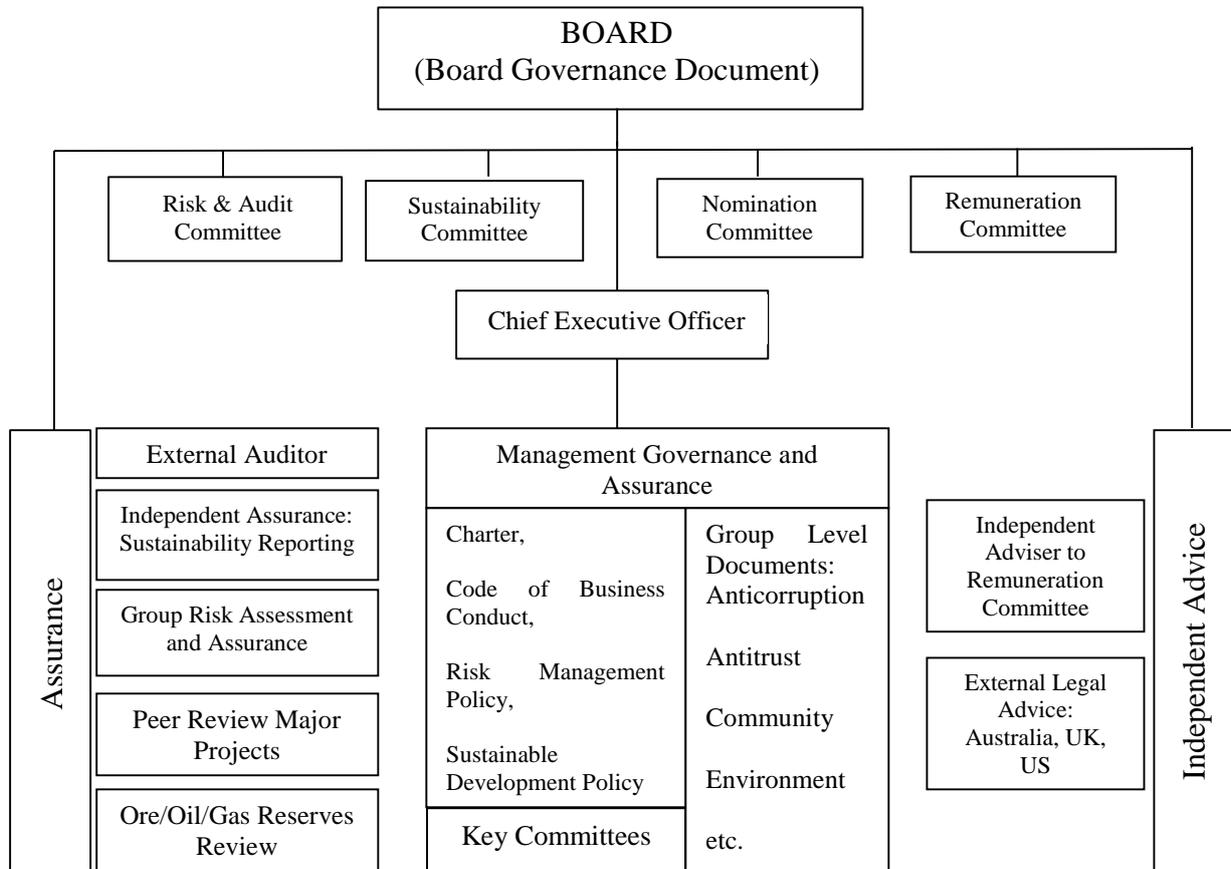
In line with its multi-national operations in several countries, BHP Billiton claims to benefit to local environments and communities through contributions, as implicit in the statements below:

*When BHP Billiton Petroleum began a major expansion of its Zamzama gas plant in Pakistan to accelerate commercialisation of unallocated reserves, it faced the challenge of having a workforce with limited or no experience of construction sites or of effective occupational health and safety processes. At the end of the two-and-a-half-year project, besides achieving outstanding safety results, BHP Billiton was successful in transferring safe work processes to its contractor and the contractor's workforce. (2009 Sustainability Supplementary Report, p. 32)*

*In Zululand, South Africa, BHP Billiton Aluminium, in partnership with The Wildlands Conservation Trust, funded the establishment of the Indigenous Trees for Life Program to create livelihoods for disadvantaged community members, while also establishing lasting environmental benefits. The program contracts unemployed members of the Mzimela community to plant and care for seedlings in the local forest and to sell a portion of seedlings to generate income. Participants – named 'Treepreneurs' – are trained in indigenous tree propagation, mentored and given starter packs and a market through which to sell a portion of the trees they propagate. (2011 Sustainability Report, p. 23)*

The notion of corporations as webs of relationships is supported by the Company's organisational structure and commitment to maintain relationships. The BHP Billiton governance structure is depicted in Figure 5.1. As illustrated, there are four committees that play significant and important roles in maintaining relationships with stakeholders. These are the Risk and Audit Committee (RAC), Sustainability Committee, Nomination Committee and Remuneration Committee.

**Figure 5.1 BHP Billiton governance structure**



Source: BHP Billiton's 2011 Annual Report, p. 110.

The RAC assists the Board in monitoring the decisions and actions of the CEO and the Group and in gaining assurance that progress is being made towards the corporate objective. The RAC oversees the development of the financial statements, the appointment, remuneration, qualifications, independence and performance of the External Auditor and the integrity of the audit process as a whole, as well as compliance with applicable legal and regulatory requirements. The RAC's role, in assuring high-quality financial reporting and improving disclosure and accountability, benefits society and other stakeholders in financial decision making.

The Remuneration Committee assists the Board in its oversight of the remuneration policy, the determination of levels of reward for the CEO, the annual evaluation of the performance of the CEO, and compliance with applicable legal and regulatory

requirements associated with remuneration matters. Even though the role of the Remuneration Committee is specifically focused on employee interests, it also serves the interests of shareholders by ensuring that the Company has utilised its funds to properly remunerate its employees.

The Nomination Committee assists in ensuring that the Board comprises individuals who are best able to discharge the responsibilities of a Director, having regard to the highest standards of governance, the strategic direction of the Group and the diversity aspirations of the Board. The Nomination Committee also has oversight of the training and development activity for all Directors. This allows for consideration and review of the appropriate skills mix for the Board. Even though the role of the Nomination Committee is not addressed to specific groups of stakeholders, it indirectly serves the interests of all stakeholders, ensuring that governance is conducted appropriately with “the right man in the right place”.

Finally, the Sustainability Committee assists the Board in its oversight of the effectiveness of the Group’s strategies, policies and systems associated with health, safety, environment and community (HSEC) matters, compliance with applicable legal and regulatory requirements associated with HSEC matters, and communication to shareholders regarding the work of the Committee on behalf of the Board. The roles played by the Sustainability Committee reflect the Company’s approach to HSEC and sustainable development governance, which specifically address the interests of environment and community groups of stakeholders.

Those four committees have conducted regular meetings every year to fulfil their roles and discuss several issues. The frequency of meetings is disclosed in the annual reports and summarised as follows.

**Table 5.4 The frequency of meetings**

	2006	2007	2008	2009	2010	2011
Risk & Audit Committee	8	9	6	9	9	9
Sustainability Committee	4	4	6	7	7	7
Nomination Committee	6	6	7	7	6	7
Remuneration Committee	6	7	5	7	7	8

Source: Summarised from BHP Billiton's Annual Report 2006-2011.

In managing its relationships with stakeholders, the ethics of care principle, as suggested by Burton and Dunn (1996): “Care enough for the least advantaged stakeholders that they not be harmed; insofar as they are not harmed, privilege those stakeholders with whom you have a close relationship” (Burton and Dunn 1996, p.144) is reflected in the Company's goal of Zero Harm, as follows:

*Our vision for sustainable development is to be the Company of choice — creating sustainable value for shareholders, employees, contractors, suppliers, customers, business partners and host communities. Central to our vision is our aspirational goal of Zero Harm to people, our host communities and the environment. (2008 Sustainability Report, p. 18)*

*Community engagement activities are required to be socially inclusive by involving disadvantaged and vulnerable groups. (2010 Sustainability Supplementary Report, p. 3)*

The Zero Harm goal at BHP Billiton is simply defined as:

*Our aspirational goal, expressed in our Sustainable Development Policy that reflects our continual drive to minimise harm to people, our host communities and the environment from our activities. (2006 Sustainability Report, p. 33)*

The Company has put considerable efforts into achieving the Zero Harm goal, which can be seen in several indicators, as presented in Table 5.5.

**Table 5.5 Zero Harm goals at BHP Billiton**

Zero Harm Goal	Realisation					
	2006	2007	2008	2009	2010	2011
<b>Zero Harm</b>						
Zero fatalities	3 fatalities	8	11	7	5	2
Zero significant environmental incidents	3 incidents	0	0	1	1	0
Zero fines and prosecutions	7 fines greater than US\$1,000; total fines paid US\$479,809  Safety fines \$314,410  Environmental fines \$141,526	Health fines \$8,256  Environmental fines \$37,387  Safety fines 186,096	Safety fines \$217,650  Environmental fines 117,835	Safety fines \$329,135	Safety fines \$189,674  Environmental fines \$35,057	Safety fines \$306,300  Environmental fines \$2,454
<b>Health</b>						
Annual reduction in exposures above occupational exposure limits, expressed as a percentage of people of the workforce	Potential occupational exposure to noise, if not for the use of personal protective equipment (PPE), reduced by 6 per cent from 2004/05	Potential occupational noise exposure, if not for the use of PPE, increased by 4 per cent from 2005/06	4 per cent increase in potential employee exposures over the OEL (excluding noise) since 2007	10 per cent reduction since 2007  There was a 30 per cent reduction in the proportion of employees potentially exposed to airborne substances and	Overall 3.9% reduction.  29% reduction in the proportion of employees exposed to chemical agents offset by 4.7% increase in proportion of	Total employees exposed 21,464 (reduction of 7.8% on FY2007 base year)

Zero Harm Goal	Realisation					
	2006	2007	2008	2009	2010	2011
				a 3 per cent reduction in the proportion of employees potentially exposed to noise	employees exposed to noise	
Annual reduction in incidence of occupational disease	The incidence reduced by 10 per cent	Increased by 17 per cent	26 per cent reduction	27 per cent reduction  51 fewer employees reported occupational disease	52 fewer employees reported occupational illness, a 27% reduction in the rate compared with 2007.	We are on track to meet the public target with 68 fewer cases than reported in 2007 (39% reduction)
<b>Safety</b>						
Annual reduction in Classified Injury Frequency Rate (CIFR)	CIFR increased from 3.9 to 4.8, resulting in an overall reduction to date of 28 per cent against the baseline CIFR of 6.7	CIFR reduced from 4.8 to 4.3, resulting in an overall reduction to date of 36 per cent against the baseline CIFR of 6.7	Total Recordable Injury Frequency Rate (TRIFR) for 2008 was 5.9, an improvement of 20 per cent on the TRIFR recorded in 2007	24 per cent reduction since 2007 base year  The TRIFR for 2009 was 5.6	28% reduction since 2007 base year  The TRIFR for 2010 was 5.3	The TRIFR for FY2011 was 5.0
<b>Environment</b>						
Aggregate Group target for	During the year,	Increased by 2	5 per cent	GHG intensity	GHG	GHG

Zero Harm Goal	Realisation					
	2006	2007	2008	2009	2010	2011
reduction in greenhouse gas (GHG) emissions per unit of production	the GHG intensity index increased by 3 per cent	per cent	increase in GHG emissions per unit of production in 2008	index is currently tracking at 3 per cent increase	emissions intensity index has reduced 7%	emissions intensity is 18% lower than 2006 base year
Aggregate Group target of 10 per cent reduction in fresh water consumption per unit of production	During the year our water intensity reduced by 6 per cent	Increased by 3 per cent	7 per cent improvement in the ratio of water recycled/reused to high-quality water consumed since 2007	The water use index is currently tracking at 8 per cent above 2007 base year	Improved 7% on our FY2007 baseline year	The water use index is currently tracking at 8% improvement on 2007 base year
<b>Community</b>						
Aggregate contribution to community programs, including in-kind support, of a target of 1 per cent of pre-tax profits, calculated on a three-year rolling average	Expenditure totalled US\$81.3 million, equivalent to 1.45 per cent of pre-tax profits on a three-year rolling average	Expenditure totalled US\$103.4 million, equivalent to 1.1 per cent of pre-tax profits on a three-year rolling average	Expenditure totalled US\$141 million, equivalent to 1.0 per cent of pre-tax profits based on the average of the previous three years' pre-tax profit publicly reported in each of those years	1 per cent pre-tax profit invested in community programs. Total community investment was \$197.8 million	\$200.5 million invested in community programs	US\$195.5 million invested in community programs

Source: Summarised from BHP Billiton's Sustainability Report 2006-2011.

**Sub-principle (b): Corporations should thrive on chaos and environmental change**

The connection to others, as suggested by the ethics of care, is manifested in creating a harmonious relationship with the dynamic business environment to create diversity, offer new opportunities and take change and adaptation as a guiding principle in managing business.

At BHP Billiton, the harmonious relationship is sustained through the sustainability program. The “sustainability” mission, developed as the consequence of concern among stakeholders and as suggested by the feminist ethics of care, is explained explicitly in the Sustainability Report, along with the challenges and benefits of applying sustainability principles. The Company’s approach to sustainable development through the improved integration of social, environmental, ethical and economic factors has been disclosed since 1997 when it began its environmental reporting. The Company explains:

*... there are also many clear societal benefits that flow from our ability to integrate aspects of sustainability into our business. These benefits include, but are not limited to, contributing to improved standards of living and self-sustaining communities.*  
(2006 Sustainability Report, p. 55)

The challenges to sustainability are disclosed as those issues that may have a material impact on the Company’s ability to be successful in business. These impacts can directly affect shareholders, employees, communities and the natural environment. The Company lists the sustainability challenges as follows:

- a. Eliminating fatal risks;
- b. Occupational and community health;
- c. Greenhouse gas emissions;
- d. Access to and management of resources - land, water, biodiversity and people;  
and
- e. Sustainable community development and closure.

The Company acknowledges that each challenge is complex, often converging with other challenges. In defining and reviewing those challenges, internal and external

factors have been taken into account. External factors include concerns raised by stakeholders; sector challenges reported by peers; competitors and key industry forums; relevant laws, regulations and international agreements; and anticipated sustainability impacts, risks or opportunities identified by its people, often in partnership with independent recognised experts. Internal factors are identified in the Board Governance Document, Company Charter, Strategic Framework, Sustainable Development Policy, HSEC Management Standards and HSEC performance targets; the interests and expectations of its people; key risk factors; and the core competencies and structure of the Company's organisation.

Despite the challenges, the Company admitted that the benefits of applying sustainability principles as the bottom-line performance is dependent on ensuring access to resources and securing and maintaining the licence to operate and grow. Enhancing the sustainability performance is deemed as recognising the value protection and value-added to maximise the bottom-line performance. The benefits from a business perspective are as follows:

- a. Reduced business risk and enhanced business opportunities by embedding risk management in all critical business systems and processes so that risks can be identified and managed in a consistent and holistic manner.
- b. Gain and maintain the licence to operate and grow.
- c. Improved operational performance and efficiency.
- d. Improved attraction and retention of the workforce.
- e. Maintained security of operations as trusting and supportive relationships can lead to reduced security risks, whereas distrustful relationships can lead to heightened security risks. This is particularly critical for operations in parts of the world with politically unstable environments.
- f. Enhanced reputation.
- g. Enhanced ability to plan strategically for the longer term by anticipating and understanding trends in society such as new regulations, heightened societal expectations and improved scientific knowledge.

Beyond the business case described above, the Company also highlighted many societal benefits that flow from the ability to integrate sustainability concepts into the culture, policies and processes. These benefits include:

- *Improved standards of living*
- *Self-sustaining communities*
- *Enhanced resource conservation*
- *Enhancement of biodiversity conservation*
- *Enhanced economic contributions*
- *Improved stakeholder trust.* (2008 Sustainability Report, p. 20)

The balance between the profit motive of a company and social responsibility is acknowledged through the sustainable development strategy, which comprises two dimensions – the business dimension and the sustainability dimension. Together these contribute to bottom-line performance. The sustainability dimension is a “necessary condition” for the business dimension to achieve the bottom-line performance, as described by BHP Billiton:

*Business Dimension*

*The business dimension represents traditional contributors to a financially successful and competitive business, recognising that without a profitable business we are unable to contribute to the broader goals of sustainability. This dimension includes:*

- *Business excellence and customer focus.*
- *Portfolio diversity.*
- *Deep inventory of growth projects across all Customer Sector Groups, ... as well as appropriate merger and acquisition activities.*
- *Quality, long-life assets.*

*Sustainability Dimension*

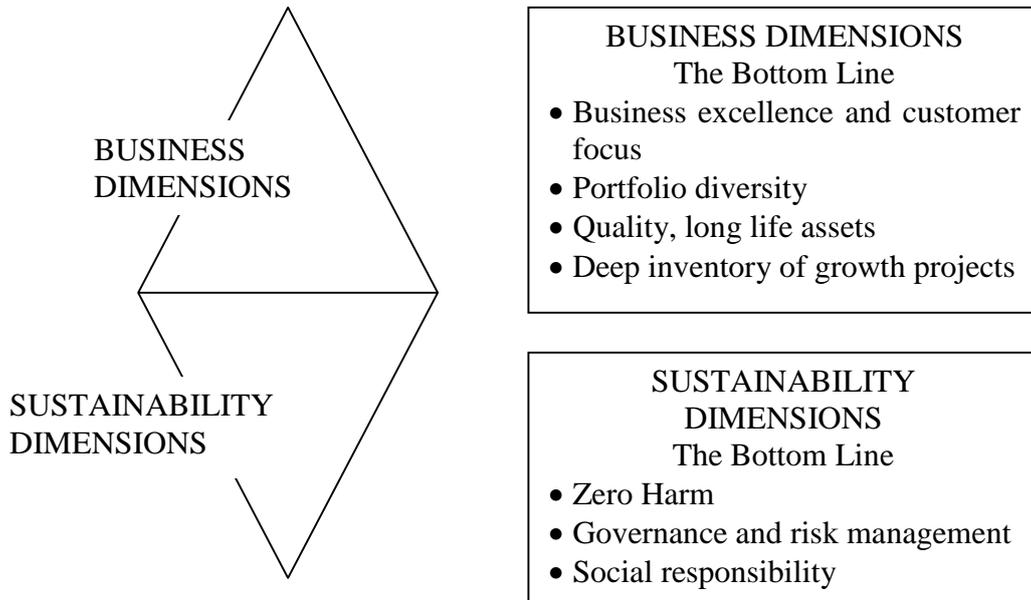
*Our bottom-line performance is, however, dependent upon ensuring access to resources and gaining and maintaining a licence to operate and grow. Maximising bottom-line performance is about recognising the value protection and value-add to be achieved through performance in non-financial dimensions - or sustainability dimensions, such as:*

- *Aspiring towards Zero Harm to people, our host communities and the environment.*
- *Ensuring effective governance and risk management processes are in place to ensure a precautionary approach is taken to achieving business outcomes.*
- *Recognising the need to be socially responsible and contribute to sustainable community development.*
- *Ensuring the broader economic contributions of our operations are effectively injected into the regions where we operate.* (2007 Sustainability Report, p. 46)

The Company uses a metaphor of a natural diamond structure to portray its sustainable development strategy, as illustrated in Figure 5.2, stating that, “The diamond’s inherently stable structure is created by the strength in each dimension that contributes

equally to an even stronger, stable and more valuable whole and is symbolic of our total business approach to sustainable development.” (2007 Sustainability Report, p. 47)

**Figure 5.2 A metaphor of natural diamond structure**



Source: 2007 BHP Billiton’s Sustainability Report, p. 47.

By balancing the gained profit and social responsibility aspects, BHP Billiton even claimed that the economic contribution to social responsibility activities represents something much more valuable than the just profit:

*The economic contribution we make to society is much more than the financial profits we derive. Our contribution includes the value that flows from the broader contributions of our operations, such as payments to our employees and suppliers and disbursements to governments, including taxes and royalties. (2010 Sustainability Supplementary Report, p. 25)*

The comparison between BHP Billiton’s profits and its economic contributions is summarised in Table 5.6.

**Table 5.6 Profit and the economic contribution (in US\$ Million)**

Year	Profit	Economic value generated (Revenues)	Economic Contribution (Economic value distributed)					Total Economic Contribution	Economic Value Retained
			Payments to suppliers, contractors, etc	Employee wages and benefits	Payments to providers of capital	Payments to government	Community investment		
2006	<b>10,534</b>	39,886	17,988	2,982	2,562	5,341	81,3	<b>28,954</b>	10,931
2007	<b>13,496</b>	47,962	19,936	3,311	2,872	6,061	103	<b>32,283</b>	15,679
2008	<b>15,962</b>	59,991	26,358	4,360	3,857	8,121	141	<b>42,837</b>	17,154
2009	<b>6,338</b>	50,762	23,877	4,345	5,152	7,940	198	<b>41,512</b>	9,250
2010	<b>13,009</b>	53,212	22,306	4,830	5,114	6,892	200	<b>39,342</b>	13,870
2011	<b>23,946</b>	72,229	26,997	5,457	5,551	9,943	196	<b>47,948</b>	24,281

Source: Summarised from BHP Billiton's Annual Reports and Sustainability Reports 2006-2011.

BHP Billiton identifies risk factors each year and conducts risk management. The approach to governance and risk management processes is based on a precautionary attitude to achieving business outcomes by embedding risk management processes into all critical business systems. The risk profile for the whole business is reviewed and considered by the Board. The oversight of risk management is delegated to the RAC although the Board retains overall accountability for the risk profile.

The Company has identified several business risks that could negatively affect its results and performance, as follows:.

- a. Impacts arising from the global financial crisis.
- b. Fluctuations in commodity prices and currency exchange rates.
- c. Failure or non-performance of counter-parties, failure to discover new reserves, maintain or enhance existing reserves or develop new operations.
- d. Breaches in information technology security and in governance process.
- e. Impact of health, safety, environmental and community exposures and related regulations on operations and reputation.
- f. Unexpected natural and operational catastrophes.
- g. Climate change, greenhouse effects and related regulations and taxes.

The last three business risks identified in this list actually relate to social and environmental risks. This indicates that BHP Billiton has interpreted risk factors from a feminist ethics of care perspective.

In mitigating the social and environmental risks, the Company has taken several steps, including working together with other organisations or global alliances. These steps are:

- a. Taking an active role in climate change policy development and engaging with the Australian Government in developing the climate change policy response. Effective strategy for minimising Australia's exposure to a future global carbon price has been proposed, which includes avoiding the construction of new long-life, carbon emission intensive assets where affordable low-carbon alternatives are available, especially in the power and building sectors. The Company

recognises any alliances to tackle this challenge, which will need to cross national and cultural boundaries, but the developed world has a clear leadership responsibility in achieving a global approach.

- b. Complying with applicable laws, regulations and other requirements, including assessing the adequacy of the laws of host countries compared with the Company's standards. The risk management approach addresses corruption-related risks in making decisions, including hiring and deploying personnel, business planning, investments, new country entry, all interactions with government officials and all activities with business partners.
- c. Focusing on the efficient use of resources and preventing and reducing pollution.
- d. Advising on the responsible use of the Company's products and by-products, including consumption, storage, transport, recycling and disposal; working with those involved throughout product life cycles and recognising the shared responsibility across the value chain.
- e. Enhancing biodiversity protection by assessing and considering ecological values and land-use aspects in investment, operational and closure activities. A five-year alliance has been embarked on since July 2011 by Conservation International and BHP Billiton to deliver significant and lasting benefits to the environment by preserving land of high conservation value in key regions where BHP Billiton operates. Achievement of this outcome will be planned in collaboration with local partners.

**Sub-principle (c): Replace conflict and competition with communication and collective action**

A feminist rereading of the stakeholder concept suggests finding win-win situations to turn what initially appears to be conflict of interest among stakeholders into forms of collaboration and effective communication to resolve conflicts (Wicks, Gilbert and Freeman 1994).

Two cases are presented below to analyse whether the Company has replaced conflict and competition among stakeholders with communication and collective action.

### **Case 1: Carooona Coal Project in New South Wales (NSW), Australia**

In the 2009, 2012, and 2011 Sustainability Reports, BHP Billiton provided community updates on the Carooona Coal Project in NSW, Australia. Below is an excerpt from the 2009 Sustainability Supplementary Report on this project.

#### **Exploration under way at the Carooona Coal Project, Australia**

In 2006, BHP Billiton was granted an exploration licence to enable it to conduct exploration activities to determine the extent of a coal resource, undertake environmental and social impact assessment studies and potentially develop a mine proposal in the Gunnedah Basin of New South Wales, Australia. The exploration licence is located in an area that contains ridge country for grazing and forestry, fertile cropping land and deep alluvial irrigation aquifers that together form a rich agricultural resource. Working with local landholders, BHP Billiton has completed over 150 slim core exploration bore holes and established numerous groundwater and environmental monitoring stations within the exploration area.

#### **The challenge**

Some landholders in the area have actively voiced concerns relating to the effects of both exploration and a potential mine on the farming country and deep alluvial aquifers, and there has been substantial media interest in the project. Over the past year, a group of local residents has established a blockade to prevent BHP Billiton from accessing an exploration site on one of the landholder's properties.

Earlier in calendar year 2009, some landholders undertook legal proceedings against BHP Billiton in the NSW Mining Wardens Court with the aim of, among other things, preventing BHP Billiton from exercising its right under its exploration licence to access their properties to undertake exploration activity.

The legal action was unsuccessful and BHP Billiton was granted access to the properties to conduct exploration drilling. The landholders have appealed this decision to the NSW Supreme Court. Also, an action group formed by local residents has commenced

proceedings in the NSW Land & Environment Court against the NSW Minister for Mineral Resources and BHP Billiton challenging the validity of the grant of the exploration licence by the Minister.

### **The project**

BHP Billiton has been working with the local community throughout the Caroon Coal Project area to better understand and address concerns being raised about the potential effects of exploration and mining.

### **Achievements**

BHP Billiton undertook a review of its exploration and development plans and provided the New South Wales Government with recommendations to help address community concerns. The Government has announced amendments to the Special Conditions of BHP Billiton's Exploration Licence (EL6505) that will formalise BHP Billiton's commitment not to undertake any of the following activities in the area covered by the Exploration Licence:

- long wall mining underneath the deep alluvial irrigation aquifers
- long wall mining underneath the floodplain
- open-cut mining.

We will continue to work hard to engage with the local community to ensure their concerns are fully understood and addressed. This work is expected to take several years.

In 2010, legal proceedings challenging the validity of the Caroon exploration licence and BHP Billiton's right to access properties to conduct exploration activities continued. The challenge to the validity of the Caroon exploration licence grant (reported in 2009) was unsuccessful in the Land and Environment Court and the local action group appealed this decision to the NSW Court of Appeal.

In late 2009, the Company engaged an independent community engagement specialist to conduct interviews with stakeholders, including community activists, to better understand their concerns. With permission from stakeholders, BHP Billiton published

the community's feedback in a report and openly acknowledged community concerns, which included property rights and environmental protection of farming land and water supply. In responding to the report, BHP Billiton gave a commitment to work with the community, including through a series of community workshops, to prioritise issues of concern and establish a pathway towards resolution. Through the interviews, community members made it clear that they wanted BHP Billiton to listen to and respect their concerns. This reflects the intensive communication strategy implemented by the Company to resolve the conflict.

In addition to the commitment to develop mutually agreeable solutions to issues that were raised, BHP Billiton committed to a number of new community engagement initiatives that have been implemented to address community concerns regarding the protection of the region's water resources. This involves:

- Committing to an independent third party review of the water monitoring program so the community can be assured that the Company has built a robust model of the water systems and will have sufficient information to evaluate possible impacts of any mine.
- Establishing a forum to share information about exploration drilling techniques and data generated from water monitoring activities. Local landholders will have the opportunity to share their knowledge and experience of the region's natural resources through the forum.

Despite BHP Billiton's intensive communication efforts, disagreement and dissatisfaction among local people (especially farmers) still continues for there is potential that the coal project will contaminate underground natural aquifers and destroy prime farming land (Cunich 2008; The Centre for Media and Democracy 2012). In 2010, a "David and Goliath style" fight occurred as two landholders legally prevented BHP Billiton from accessing their properties to conduct exploration activities. The NSW Supreme Court decided that access arrangements determined by the Mining Warden and Land and Environment Court were invalid. The Court determined this partly on the basis that BHP Billiton had not notified and entered into a single access

arrangement with all landholders with a relevant interest in the land, including mortgages. This court decision did not stop mining; it was a matter of legalities about how an explorer gets access to properties to explore. However, this decision has had widespread implications for the NSW exploration industry as the Court's interpretation of the legislation was contrary to that generally adopted by the government, mining companies and landholders. Amendments to NSW legislation have since been passed to ensure that the legislative regime for accessing properties to conduct exploration is workable for all parties (2010 Sustainability Report).

The option taken by landholders to undertake legal proceedings against BHP Billiton shows that the Company has not been successful in appeasing the local people through active and thorough communications. Consequently, it has not been successful in this case in resolving the conflict by applying communication and collective action, an approach suggested by the ethics of care. However, the communication process implemented prior to the legal proceedings can be interpreted as the application of both the ethics of care and the ethics of justice (through formal rule and law) in seeking a resolution.

### **Case 2: Labour strike in South Africa**

In the 2011 Sustainability Report, BHP Billiton reported on a labour strike of more than one week's duration in one of its operations in South Africa. The Company did not disclose much about this strike, let alone the communication and negotiation approach to accommodate the workers' demand. Only this statement is presented regarding the strike: 'In line with employee relations approach, we believe that ensuring our employees are directly engaged with the business and aligned with business goals is the most effective way of avoiding any form of industrial action' (2011 Sustainability Report, p. 10).

External sources reported this as a strike over pay after failing to reach agreement with BHP Billiton. The demand for a larger share of profits for pay increases, higher production bonuses and better job conditions had caused significant lost production due to the stoppage (The Sydney Morning Herald 2011). The workers remained on strike as

the Company indicated it did not want to talk with the Union anymore. This reluctance on the side of BHP Billiton might be due to constant complaints of rising costs, including rising labour costs. However, all input costs that the industry faces are comparatively small compared to the profits made from rising commodity prices and hence, there should be a room to negotiate with the workers.

The labour strike case showed the lack of intensive communication to resolve a problem as suggested by the ethics of care. BHP Billiton had already developed a sympathetic employee policy, which acknowledged the freedom to join a labour union and directly engage them with the business. However, when there was a demand from employees, the communicative action to achieve an agreement was not followed intensively, resulting in the labour strike. Previous strikes in Escondida, Chile in 2006 and in Ekati Diamond, Canada in 2007 also showed management's lack of communication in terms of reaching agreement regarding the workers' demands.

The frequently occurring labour strikes might represent masculine metaphors behind the stakeholder concept, as indicated by Wick, Gilbert and Freeman (1994), which evoke conflict and competition as the best language to describe how firms should be managed. In this metaphor, weighing or balancing the merits of various competing interests should be performed by good management, pursuing those which are most compelling or beneficial and working to resolve conflict. In the case of the labour strike, BHP Billiton faced competing demands, between workers for higher wages and better working conditions and other stakeholders, such as shareholders, customers and suppliers, to keep the production costs (including labour) low so that it can maintain the dividend levels and product price, as well as its ability to pay suppliers. In the "masculine" metaphor, managers should discuss how the interests of stakeholders are affected, weigh their options, then make a decision, placing little emphasis on communication and collective action.

#### **Sub-principle (d): Strategy as solidarity**

The fourth assumption in stakeholder theory is that strategy formulation should be conducted objectively and analytically based on factual data, quantification and

empirical inquiry. The perceptions and interpretations of decision makers are not prioritised. The implication of this is that stakeholders are silenced, and detachment from the identities, emotions, needs, and perceptions of particular individuals distance the decision makers from stakeholders.

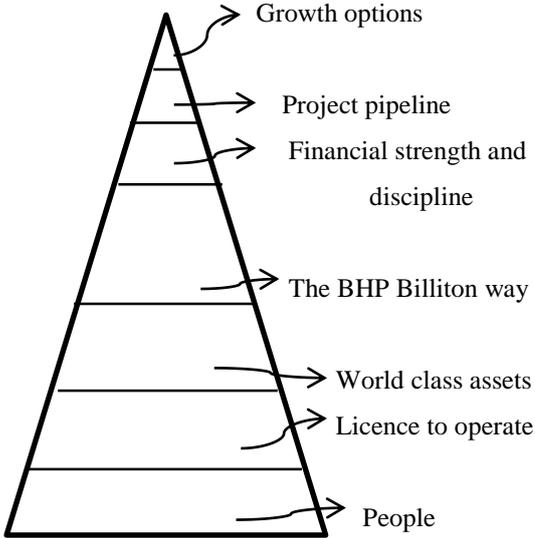
Feminist reading of this concept is the opposite, as relationships and cooperation cannot be easily translated into abstract formulation. While strategy as objectivity suggests decisions should be "dictated by the numbers" or as "business decisions," the feminist view of solidarity requires that decisions are made based on the responsibilities and relationships a company has with specific stakeholders. This does not mean that the feminist perspective rejects empirical study or quantification in formulating strategy. It suggests that numbers alone are not enough; they should not dictate decisions and should be complemented by solidarity among stakeholders. This approach will also achieve several practical goals, such as improving communication and coordination, allowing a company to be more responsive and decentralised and increase the coherence between the actions of employees and the direction set by BHP Billiton. Hence, the strategic decision is thought of and developed in terms of the interests, desires and needs of all stakeholder groups through negotiations and agreements with these groups, rather than as determined solely by the Company.

Two strategies are analysed to determine whether the notion of strategy as solidarity has been followed by BHP Billiton. These are discussed as follows.

### **Analysis 1: General corporate strategy**

As evidenced in the documentation from 2006 to 2011, a slightly different statement of the corporate strategy was developed in this period, as presented in Table 5.7.

**Table 5.7 BHP Billiton’s general corporate strategy statements 2006-2011**

Year	Sustainability Report	Annual Report
2006	<p>Our sustainable development strategy comprises two dimensions – the business dimension and the sustainability dimension – that together contribute to bottom-line performance.</p> <p>The business dimension represents traditional contributors to a financially successful and competitive business, as without a profitable business we are unable to contribute to the broader goals of sustainability.</p> <p>Our bottom-line performance is, however, dependent upon ensuring access to resources and gaining and maintaining a licence to operate and grow. This highlights the criticality of the value protection and value added that can be achieved through enhanced performance in non-financial dimensions – or sustainability dimensions. (p. 57)</p>	<p>We have chosen to represent this refined strategy in a simple form, via a seven-layered pyramid. (p. 8)</p> 
2007	Same as 2006	<p>Essentially, our strategy is to ensure we have a suite of long-life, low-cost assets, diversified by geography and commodity, that can be expanded and that are largely export-oriented. The growth opportunities implicit in this strategy mean we can move quickly to increase capacity from an existing operation when we determine that global demand warrants such an expansion. (p. 9)</p>
2008	Same as 2006	<p>Our strategy</p> <p>Our objective as a corporation is to create long-term shareholder value through the discovery, development and conversion of natural resources, and the provision of innovative customer and market-focused solutions.</p> <p>To achieve this we aim to own and operate a portfolio of upstream, large, long-life, low-cost, expandable, export-oriented assets across a diversified geographic and commodity base, and pursue growth opportunities consistent with our core skills. (p. 95)</p>

Year	Sustainability Report	Annual Report
2009	For almost a decade, we have been committed to a long-term strategy of investing in low-cost, world-class, expandable and export-oriented operations that reflect diversification across markets and geographic regions. (p. D)	Same as 2009 Sustainability Report
2010	We continue to be committed to a long-term strategy of investing in low-cost, world-class, expandable and export-oriented operations, diversified across markets and geographic regions. BHP Billiton has a long-term view that includes continued investment through the cycles and a focus on the fundamentals. The result is a significant capability and a portfolio that balances risk and provides flexibility. (p. D)	Our corporate objective is to create long-term value for shareholders through the discovery, development and conversion of natural resources, and the provision of innovative customer and market-focused solutions.  We pursue this objective through our unchanged strategy of investing in ‘tier one’ assets that are large, low-cost and long-life to provide a balanced portfolio of export-oriented commodities. We continue to invest in the future and have a deep inventory of growth assets. (p. 7)
2011	For many years, we have implemented our strategy of investing in large, high-quality assets that deliver growth and superior margins throughout the economic cycle to create long-term shareholder value. (p. 6)  Our strategy is founded on the need for diversification– by commodity, geography and market. To succeed we need a workforce that reflects our values and the communities in which we operate. (p. 9)  ...we adopt a holistic approach to business strategy, seeking to realise value for our stakeholders through a sustainable business philosophy. (p. 45)	Our corporate objective is to create long-term shareholder value through the discovery, acquisition, development and marketing of natural resources.  We pursue this through our consistent strategy of owning and operating large, long-life, low-cost, expandable, upstream assets diversified by commodity, geography and market.  This strategy means more predictable business performance over time which, in turn, underpins the creation of value for our shareholders, customers, employees and, importantly, the communities in which we operate. (p. 5)

From those corporate strategy statements, there are inferences of narrowing down from the broad statement in 2006. This includes several factors, from incorporating people in a seven-layered pyramid, to ‘investing in large, high-quality assets that deliver growth and superior margins throughout the economic cycle to create long-term shareholder value’ as the strategy in subsequent years. The narrowing down focus in the corporate strategy to the so-called pure economic one creates an impression that the strategy was formulated based solely on factual and objective data while ignoring the responsibilities

and relationships it has with specific stakeholders. However, in 2011, BHP Billiton stated that after owning and operating large, long-life and low-cost assets, there would be a further step to creating value for various stakeholders as the consequence of the strategy. The corporate strategy was also accompanied by sustainable development strategies that encompass other aspects beyond the economic.

Hence, it can be concluded that the corporate strategy formulation at BHP Billiton has been conducted using the solidarity basis as suggested by the ethics of care, even though an all-inclusive, broad statement of strategy as presented in 2006 would better reflect the “strategy as solidarity” concept applied by the Company. A complete statement of strategy is also important to highlight that the Company does not indicate growth as a key objective as it is ‘problematic from an environmental sustainability perspective: growth at all costs is oxymoronic to preservation of natural assets’ (Brennan et. al. 2011, p. 57).

**Analysis 2: Specific strategies**

Beside the general corporate strategy, there are several specific strategies disclosed in BHP Billiton’s reports, as outlined in Table 5.8.

**Table 5.8 BHP Billiton’s specific strategies statements 2006-2011**

Year	Sustainability Report	Annual Report
2006	<p>Our safety strategy is based on three principles:</p> <ul style="list-style-type: none"> <li>• leadership effectiveness</li> <li>• behaviours and awareness</li> <li>• rigorous standards and systems for managing risks and ensuring full compliance. (p. 62)</li> </ul> <p>Local and Indigenous Communities Our strategy is to engage our communities in our business where possible and establish an open communication channel where all parties feel they have the right to participate in discussions. (p. 84)</p> <p>Our global footprint and our multi-source supply strategy underpin our commitment to and capability of delivering to customer</p>	

Year	Sustainability Report	Annual Report
	<p>requirements. (p. 149)</p> <p>We have developed a human resources strategy to connect our values, culture and business objectives to the way we manage our people. (p. 464)</p>	
2007	<p>Community Investment Strategy We aim to make a valuable contribution to our local communities, not only by providing employment opportunities, but also by supporting organisations that help to create a healthy and sustainable social fabric in those communities. (p. 248)</p> <p>The Emerging Markets program is a long-term strategy. The Company does not intend to source all products and services from emerging markets.(p. 299)</p>	<p>Our capital management strategy remains the same: to reinvest in our extensive pipeline of world-class projects that carry attractive rates of return regardless of the economic climate; ensure a solid balance sheet; and return excess capital to shareholders.(p. 21)</p>
2008	<p>Our strategy to achieve our greenhouse intensity targets includes improving our energy efficiency and investigating cost effective alternative energy sources, including wind, solar and geothermal power.(p. 109)</p>	<p>The financial risks arising from the Group's operations are market risk, including risks associated with movements in interest rates, foreign currencies and commodity prices, liquidity risk and credit risk. These risks arise in the normal course of business, and the Group manages its exposure to them in accordance with the Group's Portfolio Risk Management Strategy. (p. 207)</p>
2009	<p>At BHP Billiton, we have an integrated people strategy that is founded on the need for effective recruitment, development and retention of talented people. (p. 8)</p>	
2010		<p>We seek to maintain a solid 'A' credit rating as part of our strategy. (p. 12)</p> <p>Diversity of gender, ethnicity, skill, thought, experience, style and language are important elements of our people strategy and are key drivers for our success. (p. 59)</p>
2011	<p>Our strategy is to invest in natural gas as one of the cleanest burning, lowest carbon dioxide intensity, fossil fuels. (p. 13)</p> <p>After consulting with neighbours, the preferred strategy to minimise noise disturbance involved creating a network of intermediate run-of-mine stockpiles set in areas where noise was less likely to carry to residents. (p. 19)</p>	<p>A Cash Flow at Risk (CFaR) framework is used to measure the aggregate and diversified impact of financial risks upon the Group's financial targets. (p. 207)</p>

The specific strategies disclosed in the reports show that the Company had applied the “strategy as solidarity” as it incorporated the relationships with and responsibilities to various stakeholders in formulating the strategies.

**Sub-principle (e): Replace hierarchy with radical decentralisation and empowerment**

The last feminist reading of the stakeholder concept according to Wicks, Gilbert, and Freeman (1994) is focused on decentralisation, team structures and worker empowerment to replace centralisation and hierarchy as a means of structuring power and authority. The primary goal is not to search for structure, order and a simple mechanistic approach but to connect employees with their jobs and unleash their potential by giving them responsibility and involvement with their jobs. The movement away from hierarchy can shift the role of managers from dictating and supervising to teaching and coordinating, promote worker involvement, increase trust, commitment and productivity without abolishing corporate structure and the division of labour.

The decentralised authority not only benefits employees through more control and involvement in work, but also all stakeholder groups since decentralisation nurtures communication and interdependence among this group. After all, this approach will result in an increase in the company’s ability to serve the interests of all stakeholders through new ideas, greater efficiency and increased responsiveness.

BHP Billiton did not present a diagram of their latest organisational structure to describe the position of staff in its 2011 reports. Instead, several statements were presented in the 2011 Annual Report and on BHP Billiton’s website, as follows:

*As we grow, the creation of a simple, accountable and scalable organisation will ensure we remain capable of managing the larger footprint that will result over time. To this end, through the BHP Billiton Operating Model, we have set up the organisation to be more scalable, more functionally specialised and in a position to deploy capital easily when required. By having a simple structure, we can organise work more effectively and let our people focus on doing what is important. (2011 Annual Report, p. 7)*

*Our organisation is structured in a way that is focused on building functional expertise and where our people understand their accountabilities.*

- *Resources are developed and converted by our businesses – Aluminium, Manganese and Nickel; Coal; Copper; Iron Ore; and Petroleum – who are responsible for delivering on our strategy. Our businesses reflect a unique diversification across markets and geographic regions.*
- *Marketing is accountable for the BHP Billiton revenue line, including sales and the physical movement of product to market. Marketing also procures traded commodity inputs to our operations.*
- *Our Group Functions operate under the instruction of the Group Management Committee to ensure the Group meets governance and assurance requirements and the activities necessary to improve the overall effectiveness of the Group.*

<http://www.bhpbilliton.com/home/aboutus/ourcompany/Pages/ourStructure.aspx>

The statements reflect the decentralised business model with responsibility for day-to-day business operations residing within each business or “Customer Sector Group” (there are nine Customer Sector Groups: petroleum, aluminium, base metals, diamonds and specialty products, stainless steel materials, iron ore, manganese, metallurgical coal and energy coal). The structure enables effective stakeholder engagement through specific activities, which vary from monthly meetings to open public forums with topics ranging from town amenity and housing to the impacts of growth and expansion projects, contractor management, security, cultural issues and social development. Improvements in the organisational structure are continual. For instance, after the succession of a new CEO, Andrew McKenzie, in 2013, a revised executive structure was announced. The top management committee was extended, but the Company created a more decentralised and simplified organisational structure (Dagge 2013).

### **5.2.2 Principle number 2: moral dilemmas are contextual**

From the ethics of care perspective, the moral problem arises from conflicting responsibilities as threats to harmony and relationships rather than from competing rights. Contextual resolution is required for such moral dilemmas, referring to the different approaches the Company has taken for different operation sites worldwide and for different cases.

Besides analysing the Annual Reports and Sustainability Reports, several online comments and news items about its operation were analysed to determine whether BHP Billiton had instigated contextual resolutions. The use of external information was deemed necessary to capture “both sides of the story”. The same approach was also

applied in analysing the Principle number 3: dilemmas solved through inductive thinking and the Principle number 4: moral development through stages is sequential and hierarchical.

In its reports, the Company stated the clear commitment by the Board and senior executives to the code of conduct. This would serve as guidance to the Company in finding the best solution to the moral dilemmas it faces, as highlighted in the following quotes:

*... irrespective of how well a Board defines its role and its expectations, corporate behaviour is dictated above anything else by the 'tone at the top'. (2006 Annual Report, p. 7)*

*The tone at the top and within the Board has fostered an environment in which we are committed to high ethical standards, fairness, full compliance with legal requirements and resistance to market pressures for short-term results. (2008 Annual Report, p. 6)*

Two cases disclosed in the reports are analysed below. The cases were selected after comparing them with information provided by external sources (such as newspapers and the webpages of mining communities). If the disclosure and the external information are significantly different, this indicates moral dilemmas that need to be investigated.

### **Case 1: Cerrejon Coal**

Cerrejon Coal is a mining operation in Colombia jointly owned by BHP Billiton, Anglo American and Xstrata and managed by a joint venture management team. Since 2006, BHP Billiton disclosed two major issues relating to Cerrejon:

1. unresolved community concerns
2. class actions concerning Cerrejón privatisation

The community issues were no longer presented in the 2011 Annual Report and Sustainability Report. While this creates an impression that the problems no longer exist, the information from external sources suggested otherwise.

The London Mining Network (2012) provided news from the Company's Annual General Meeting (AGM) on 25 October 2012 with a provocative title: 'Killing me softly

with his song: inside another BHP Billiton AGM'. This was to satirise BHP Billiton's responses over several issues discussed in the AGM that it had been over-skilled in confronting criticism with courtesy: 'Thank you for coming; thank you for raising that issue; we'll look into it; let's continue the dialogue....'

One of the issues discussed in the AGM was the Cerrejon community concerns regarding the process to resettle communities affected by the mine. Cerrejon had agreed to support affected communities in obtaining independent advice and guidance. While challenges would remain, BHP Billiton was confident that this step would assist communities in their engagement with the Company on these issues. The community representative who was present at the 2012 AGM pointed out that the first community had been destroyed in 1986 without a relocation agreement or any form of adequate compensation. He acknowledged that BHP Billiton's effort to negotiate with communities in the process of relocation was the right thing to do but there were still five communities that had been displaced before 2000 and they had not received such a response. BHP Billiton responded to some of the long-standing and more recent issues by insisting that Cerrejon management address them. A number of key initiatives had been implemented and progress was being made. The representative also said that the local communities were totally opposed to BHP Billiton's plan to divert the Rancheria River, the only river in this desert, to increase carbon production by 50 million tons per year. Recently, Cerrejon mining has decided to postpone a study into the possible diversion of the river, due to the weak carbon price experienced over the last two years (Mining.com 2012). It announced that it would continue to analyse other alternatives to the diversion of the river.

The relocation problem, which is still unresolved after almost 30 years, shows that BHP Billiton's had not been applying a contextual resolution to this moral dilemma. Complaints that their operations bring misery and disruptions to local communities is evident because the relocation and compensation plans, which were very important for the affected local people in this context, were not carefully thought out at the beginning of the operation. Furthermore, the conflict worsened with the plan to divert Columbia's Rancheria River, which was only postponed for reasons unrelated to the local

community's interests. The Annual Reports and Sustainability Reports did not explicitly disclose the working opportunities provided for the local people, but if it is true that there were not many opportunities, then the local people remained the least disadvantaged stakeholder of the Company.

**Case 2: Development project of Metallurgical Coal mining operations: IndoMet Coal Project (Indonesia)**

The 2011 Sustainability Report disclosed a development project called IndoMet Coal, which comprised seven coal contracts of work (CCoWs) covering a large metallurgical coal resource in Kalimantan, Indonesia, discovered by BHP Billiton in the 1990s. Following an assessment of the importance of local participation in developing the project in 2010, BHP Billiton sold a 25 per cent interest in the project to a subsidiary of PT Adaro Energy TBK. BHP Billiton retains 75 per cent and holds management responsibility for the project. Work was conducted to identify development options across CCoWs.

BHP Billiton had been reviewing this project for some time and was progressing certain elements, such as a railway that would aid in the initial stages of mining. Due to some complexities, however, the project had not yet involved a mine and the project still had not gone ahead in 2012. There was also scant public attention to the indigenous and local communities, climate change and the biodiversity impact (BHP Billiton Watch 2011).

In the 2008 Sustainability Report, the Company stated that the area 'has been under considerable threat from changes in land use, such as forestry and the rapid growth of palm oil plantations, poorly managed mining practices and illegal mining' (p. 127). The Company planned to commence by creating small mines in the key CCOWs, stating that, 'By starting small, our aim is to develop further understanding of and experience in how to manage the environmental and biodiversity impacts within the region before large scale operations commence' (p. 128).

BHP Billiton presented several contextual programs to prepare for the operation as follows:

- a. Developing a range of procedures and systems that ensure that biodiversity considerations are included in all relevant aspects of the mine project design and execution.
- b. Embarking on a process of engagement with conservation NGOs, biodiversity professionals, the community and researchers aimed at delivering biodiversity conservation benefits within areas of operation and supporting broad-based conservation activities in the wider landscape of the Murung Raya district.
- c. Committing to minimise impact on the forest by redesigning the exploration program to reduce unnecessary clearing of the forest by having a single exploration camp rather than satellite camps and using helicopters to transport people and equipment rather than constructing access roads.

In this early stage, it is suspected that BHP Billiton showed a contextual approach in resolving the moral dilemma of whether to start the project as soon as possible or study and review the situation first. There are oil palm plantations and other mining companies in the area and not all of them were perfectly ethical in their conduct. BHP Billiton did not take advantage of the lack of legal enforcement in Indonesia by rushing into commencing the operation, instead they committed to doing things correctly.

### **5.2.3 Principle number 3: dilemmas solved through inductive thinking**

One difference between the ethics of care and the ethics of justice lies in the resolution of moral dilemmas. The caring principle holds the view that moral dilemmas are contextual and are resolved through inductive thinking, while for the justice approach moral principles are universal and are applied to moral dilemmas through formal and abstract thinking. Inductive reasoning frames moral dilemmas as challenges with no universally-accepted and sound principles to govern the practical reasoning process.

The two cases discussed below were selected by comparing the information disclosed in the Annual Reports and Sustainability Reports and the information provided by external

sources. Any gaps found in the comparison indicate the moral dilemmas faced by the Company and, hence, become the studied objects to investigate whether the Company has applied inductive thinking in solving its moral dilemma.

### **Case 1: Bribery to Cambodia government**

Information provided by external sources showed that BHP Billiton was under investigation in the US and Australia for allegedly corrupt practices in mining deals in Cambodia and. Cambodia consistently ranks among the most corrupt countries in Asia. Several newspapers reported on Australian documents that described officials from BHP Billiton seeking a special meeting with Hun Sen prior to being given mineral exploration rights in 2006 (Doherty 2010). In September 2006, BHP-Billiton paid US\$1 million to the Cambodian government for a mining concession to conduct exploratory drilling for bauxite on 100,000 hectares in Mondolkiri province, in Cambodia's far east. The world's biggest mining company also gave the government an additional \$US2.5 million to go towards a "social fund" for development projects for local communities. Despite promises from the government that the social fund would be administered by the finance ministry, budget documents show that none of BHP Billiton's money ever appeared on the government's books. The government's Quick Reaction Unit, which deals with media, responded by stating that the report was "exaggerated" and meant to "dishonour" Hun Sen ahead of the national elections (Voice of America 2013).

In response to this case, the BHP Billiton CEO, Marius Kloppers sent an internal memo to all staff to remind all employees that working with integrity is 'critical to our successes'. He also reassured staff that the probe was still at an early stage but that BHP Billiton would also perform a thorough and fair investigation (Fitzgerald and Murphy 2010).

In the Annual and Sustainability Reports, BHP Billiton explicitly stated that it follows the Business Conduct code, prohibiting bribery. This was considered a "universal principle" that had not been followed in the Cambodia alleged bribery case. The moral dilemma showed that the Company had not followed deductive thinking by ignoring its own established rule. However, in this case, it cannot be concluded that BHP Billiton

had followed the inductive reasoning in the right direction. It probably had observed the situation in Cambodia as the one of the most corrupt countries in Asia and, hence, decided to follow the “common crime” by providing funds to be categorised as a “social fund” to the local government. Worse than that, it also failed to disclose the information in the Annual and Sustainability Report for the period of study. Such confession might not decrease BHP Billiton’s image if the information regarding the background of the case and follow-ups that has been taken to overcome such case to re-occur in the future are presented.

Gilligan (1982) provided a somewhat unclear distinction between the two principles that moral dilemmas are contextual and that inductive thinking is applied as the resolution to the dilemmas. The inductive reasoning applied also contains a weakness in that we are only able to observe particular events, not generalities, which occurred in the past. The supposition that a similar sequence of events will occur in the future as had occurred in the past is a problem of induction, as other possibilities or different consequences are not taken into account. This problem is observed in the Cambodia bribery case, as BHP Billiton did not consider the international monitoring of such practice as the consequence. Hence, it should be added to the inductive solution principle that it will be valid only if all matters of fact are based on causal relationships and the relationships are found by induction.

### **Case 2: Land Compensation for Semi-Nomadic Communities**

In the 2006-2011 Sustainability Reports, BHP Billiton disclosed that its approach to land compensation was undertaken on a case-by-case basis. Firstly, the needed land was considered then the short-term and long-term possible impacts on that land were studied. This included the present and past use of the land and the effects it may have on biodiversity and the associated ecosystem services, as well as existing land owners and occupiers.

As a general procedure, compensatory activities were implemented where residual impacts exceeded the acceptable level of impact to biodiversity, land use, watersheds and/or water sources. When financial compensation was appropriate, relevant legislative

requirements, industry practices, standards or norms that may exist within a country or region and any special circumstances that may apply, were taken into account. In some countries and regions, legislation prescribes who is to be paid land compensation, the amount, what it is for and how it is to be calculated. In other places, compensation may be by negotiation with the affected parties.

BHP Billiton preferred to have a substantial portion of any compensation payments dedicated to sustainable socio-economic projects or programs that will leave tangible and long-term benefits for the community or people receiving the compensation. It also endeavoured to ensure that benefits were provided to as many people as possible who may be entitled to them. Where substantial sums of money were involved, BHP Billiton would work to put in place appropriate governance structures so that these monies could be managed in a responsible, transparent and accountable manner.

The case-by-case policy reflects the inductive thinking applied in solving the dilemma of gaining profits from land use and expansion, and maintaining cultural heritage and relationships with host communities. The application of this policy is reflected in the community consultation and compensation process for the Ksar Hirane exploration program in Algeria, which was disclosed in the 2006 Sustainability Report. The program was designed to take into account the fact that the communities affected were typically semi-nomadic Bedouin people who were land occupiers rather than land owners. They cultivated crops and reared livestock over extensive distances, depending on seasonal factors and the availability of water.

In July 2004, BHP Billiton committed to undertake a two-dimensional seismic survey in the area and drilled a minimum of one exploration well. The local communities were informed about this activity. Prior to commencement of the survey, a local archaeologist was employed to identify any culturally significant areas along the exploration route and to conduct cultural awareness sessions with the crew so that they would appreciate heritage sites and know how to protect them.

During this time, a local permit agent working with the crew accompanied the mapping team so they could also document any potentially sensitive areas. These were typically buildings, sunken water catchment tanks or areas of cultivation. The permit agent provided details to the crew manager, who prepared an appropriate mitigation plan for the crew.

The permit agent also actively sought out local Bedouins and advised them of the planned works, asked if there were any unknown sensitive areas the crew should be aware of, and provided contact information for follow-up queries or complaints. Given the semi-nomadic nature of the inhabitants, some owners of buildings, crops and sunken water tanks could not always be found prior to the survey. Consequently, once the recording crew had passed, it was important for the permit agent to return to the lines and make himself available should anyone raise a concern.

The project's consultation process required every complaint to be logged. Due to low literacy levels in the region, complaint forms were often completed by the permit agent on behalf of stakeholders. An HSEC advisor was on site at all times to oversee the process. Various local government officials were then engaged to investigate claims and determine if there was a need for compensation. When a claim was difficult to determine, stakeholders were generally given the benefit of the doubt. If a claim was deemed to be valid, a specialist in agriculture, water or construction, according to the type of claim, was appointed by the local administration to determine an appropriate level of compensation.

The compensation agreement was then provided to the claimant for signing. The contents were typically explained orally and the signature was often an ink thumbprint. In line with regulations, the money was wired to the nearest post office for collection by the claimant, who was identified by their copy of the agreement. In one compensation case, BHP Billiton's trucks unavoidably had to pass through a wheat crop. This was discussed with a family who had sown the crop and a claim for compensation for the damaged area was subsequently raised. The householder said he had 'no problem' with

the consultation process or the amount of compensation his family received but pointed out that ‘the process is a bit slow’.

BHP Billiton addressed and sought solutions to this and other issues, which were a consequence of the need to engage a diverse range of stakeholders in the process, the long distances involved and the need to recognise the local culture and customs of the semi-nomadic Bedouins in host communities.

#### **5.2.4 Principle number 4: moral development through stages is sequential and hierarchical**

Gilligan (1982) described three levels and two transition periods in the moral development of the ethic of care.

The first level is the orientation to individual survival. In this level, the self is the sole object of concern where self-survival is the main issue and moral consideration emerges only when one’s own needs are in conflict. This level is then developed to the first transition period: from selfishness to responsibility, which reflects a definition of self within the attachments and connections to other people. The conflict is defined as what one “would” and what one “should” do.

The second level is goodness as self-sacrifice where concern for others becomes the major concern and moral judgments are derived from social norms and consensus. The moral development is further developed to the second transition: from goodness to truth. At this level, the morality of care includes care of self as well as others. The evaluation of others is not of primary importance here because the situation, the intentions and the consequences of an action are more important.

In the third level, the morality of non-violence, the conflict between selfishness and responsibility to self is resolved through a principle of non-violence. As Gilligan (1982) said: “Care then becomes a universal obligation, the self-chosen ethic of a post conventional judgment that reconstructs the dilemma in a way that allows the assumption of responsibility for choice” (p. 504).

In summary, the morality of responsibility in the ethics of care is based on a concept of harmony and non-violence and recognition of the need for compassion and care for self and others. This is in contrast to the ethics of justice where morality is based on a concept of reciprocity and fairness and recognition that one must respect the rights of others as well as one's own. The different stages of moral development between the ethics of care and justice are summarised in Table 5.9.

**Table 5.9 Moral development comparison**

<b>Morality of care and responsibility</b>	<b>Morality of justice</b>
Three stages and two transitional phases	Three levels and six stages
<b>I. Orientation to Individual survival</b>	<b>Pre-conventional – Focus is self</b>
<p>IA. From selfishness to responsibility: a definition of self within connection with others</p> <p>Recognition that precipitates internal criticism that previous actions were selfish and, as such, morally inappropriate. The criticism precipitates a new understanding of the connection between self and others, articulating the concept of responsibility, which leads to the second stage of development.</p>	<p>I. Punishment and obedience: do what is told primarily to avoid punishment</p> <p>II. Instrumental egotism and simple exchange: deals are made or only consider the cost and/or benefit</p>
<b>II. Self-sacrifice and social conformity: moral judgments are derived from social norms; desire to care for others</b>	<b>Conventional level – focus is relationships</b>
<p>IIA. From goodness to truth: a morality of care must include care of self as well as others</p> <p>Recognition that one is harming him/herself by exclusive focus on the needs of others and that such exclusionary focus is morally inappropriate. The inequality manifested in the relationships between the self and others, which is the outcome of the selflessness of the second stage, and is questioned in the second transitional phase gives rise to a balance of selfishness and responsibility at the third stage.</p>	<p>III. Interpersonal conformity Being considerate, nice, and kind to get along and cooperate with people</p> <p>IV. Social system and conscience maintenance Cooperate with society in general; everyone in society is obligated and is protected by the law</p>
<b>III. Morality of non-violence: a moral equality between self and other is achieved by equally applying non-</b>	<b>Post-conventional level – Focus is personally held principles</b>

Morality of care and responsibility	Morality of justice
<p><b>violence principle</b></p> <p>At this final stage there is a new understanding of the interconnection between the self and others, and the responsibility to care comes to include both the self and others. No longer will the individual be mired in self-sacrifice or extreme altruism. Now s/he will consider her/his own welfare, needs and desires equally with the needs and desires of others with whom s/he has relationship, letting the contextual details answer the question of whose need is greatest in this particular situation and thereby indicate an appropriate course of action.</p>	<p>V. Prior rights and social contract Being obliged by whatever arrangements are agreed to and by due process and procedure. Focus is on fairness of the law or rule as determined by equity and equality in the process of developing the rule</p> <p>VI. Universal ethical principle Rational and impartial people would view cooperation as moral. Focus is on fairness of the law or rules derived from general principles of just and right as determined by rational people.</p>

Source: Brabeck (1993), Bay (2002), (Fisher 2001).

The stages of moral development based on the ethics of care, as described previously, become the basis to analyse the approaches that have been taken by BHP Billiton in solving the moral dilemmas that it faced in two further case studies.

### **Case 1: Ok Tedi Mine, Papua New Guinea**

BHP Billiton’s project at the Ok Tedi Mine, Papua New Guinea (PNG) was a case of a “joint” moral dilemma with the PNG government between environmental interests, the desire to increase the Company’s revenue and the nation’s wealth (as it is accounted for one-fifth of PNG exports and ten percent of its GDP), and the need to maintain local employment opportunities (it employed about 2,000 people, 97% of whom were Papua New Guineans) (Sharp 2007).

The Ok Tedi mine is found in Mount Fubilan, which is part of the Star Mountains situated on the Ok Tedi River. The mine, which began operating in 1984, is run by Ok Tedi Mining Ltd. (OTML) and BHP, along with the PNG government, which owned 20% (Eslinger n.d). The PNG Government and the Ok Tedi people welcomed the development of the mine because of its economic and social benefits. Unfortunately, due to poor political choices, the mine activities caused damage to the river system. When the mine first operated, a tailing dam had been under development but was destroyed by a landslide in January 1984. The construction of the tailings storage

facility was abandoned because OTML's shareholders and the PNG Government were concerned that any major dam constructed in the area would run the risk of being destroyed by future landslides or earthquakes. The cost consideration was also taken into account. To minimise the cost of building another dam and due to the difficulties associated with tailings separation in the copper mining process, the government granted OTML temporary permission to dump the tailings into the Ok Tedi River. The argument was that any toxic materials would be diluted downstream, given the extremely high rainfall. Unfortunately, the "temporary" permission has continued for approximately 20 years because of the government's fear of losing valuable revenue if the mine is closed.

The pollution caused by this situation caught the attention of almost 30,000 landowners and in 1994 they decided to take BHP to the Supreme Court in Australia. The class action case was settled out of court, with BHP agreeing to provide a package worth \$400 million to the landowners. In the decade following, environmental problems continued to plague the site and surrounding areas. Due to the number of ecological problems, BHP Billiton proposed the mine closure in 2001 and endorsed a statement that the company would refrain from the practice of riverine disposal in future projects. The closure proposal was rejected by the PNG parliament because of the immense importance of the mine to the nation's economy. Even after the examination and analysis of the environmental impacts and recommendations from international communities, the World Bank and NGOs, for the closure of the mine, the PNG Government was very reluctant to close the mine earlier than 2010. Instead, a phase-out production plan was decided and mine closure was scheduled for 2012 (Sharp 2007).

Due to the continued dumping of tailings and other mine waste into the river system, another class action lawsuit against the mine occurred in 2000. This was also settled out of court in 2004 after BHP Billiton divested its 52% majority shares in OTML through a transfer to the PNG Sustainable Development Program Limited (PNGSDPL). The mine's management now pays additional compensation to the affected communities through the Mine Continuation Agreement while still discharging tonnes of tailings and

other mine waste into local rivers. A dredge in the lower Ok Tedi River removes slightly less than half of the tailings for on-land storage.

In line with the transfer of the 52% share to the government, the Company released itself from any responsibilities to clean up the destroyed environment. News in 2013 indicated that the government of PNG was still considering extending the mining lease until 2025 under a new management structure (Eslinger 2013).

The Company disclosed the Ok Tedi case among its discussion of former operations in its 2007, 2008 and 2009 Reports. Only a few of paragraphs were offered to describe its final involvement in the Ok Tedi mine, as presented below:

In December 2006, seven individual plaintiffs (the 'Plaintiffs') said to be representing the members of seven clans from the vicinity of the Ok Tedi mine obtained an order of the National Court of Papua New Guinea joining BHP Billiton Limited as a defendant to proceedings against the current shareholders of Ok Tedi Mining Limited and a previous managing director. Ok Tedi Mining Limited is the owner and operator of the Ok Tedi mine.

BHP Billiton transferred all of its shareholding in OK Tedi Mining Limited to PNG Sustainable Development Programme Company Limited in February 2002.

The plaintiffs sought unspecified damages for numerous matters, including contamination of the environment and adverse effects to fishing, drinking water, irrigation of crops and washing, as well as US\$3.75 billion in exemplary damages.

On 20 November 2007, the National Court of Papua New Guinea dismissed the entire claim. The plaintiffs' appeal of this decision was heard by the Papua New Guinea Supreme Court on 2 October 2008.

On 13 March 2009, the Papua New Guinea Supreme Court delivered its judgement, dismissing the appeal with costs. In view of the state of the proceedings referred to above, this matter is no longer considered material to the Group and we do not intend to include it in future reports. (2009 Annual Report, p. 174)

In the Ok Tedi mine case, the Company did not show moral development in line with the stages indicated by the ethics of care. The first level of the orientation to individual survival was manifested in the Company's and PNG government's decision not to build a tailing dam and use the riverine disposal of waste rock and mine tailings instead. The next level of transition from selfishness to responsibility was not developed, even though in August 1999 the Company announced that the environmental impacts of the Ok Tedi mine would be far greater and more damaging than predicted.

As Burton and Dunn (1996) interpreted the ethics of care principle to be “Care enough for the least advantaged stakeholders that they not be harmed; insofar as they are not harmed, privilege those stakeholders with whom you have a close relationship”, then the decision BHP Billiton took to pull out of the Ok Tedi mine was an appropriate decision to protect the surrounding community from the higher impact of the damaged environment, despite loss of employment opportunities (considered a lower impact). However, there must be an agreement with the PNG government to rehabilitate the site and provide adequate compensation for the people. There would be substantial costs, threatening profits with potential harm to shareholders in terms of dividends, but as the local community is the least advantaged stakeholder in this case, they should be prioritised.

As the “caring approach” was not followed in this case, the landowners tried to find justice through legal action against BHP Billiton, which, unfortunately, was unsuccessful. The great impact the Ok Tedi mine has had on contributing to the PNG national economy is negated by the damage to the environment. BHP Billiton has formally released itself from responsibility to return the area to its original state. The morality of non-violence is not reflected in this case and, hence, the stages of moral development failed to be applied by the Company. This is not to disregard the role played by the PNG government who was willing to accept the environmental impacts due to the foreign exchange, employment and regional development opportunities provided by the mine activities.

### **Case 2: Olympic Dam Mine, South Australia**

The Olympic Dam uranium mine was first developed by the Western Mining Corporation in 1983, despite strong and sustained opposition from traditional owners and environmentalists. BHP Billiton purchased the underground mine in 2005 and then released a draft Environmental Impact Statement (EIS) in 2009 detailing plans to turn the mine into a massive open-pit mine. This new open-pit mine was intended to operate alongside the existing underground mine and to increase uranium production from

4,000 to 19,000 tons per year and copper production from 200,000 to 750,000 tons a year (Noonan 2010).

BHP Billiton disclosed the expansion plan of the Olympic Dam mine in its 2006-2011 Reports. In 2011, it announced an approval for US\$1.2 billion in pre-commitment capital for the first phase of the project to develop an open-pit mine in South Australia. On 10 October, BHP Billiton received environmental approvals for the project from the Government of South Australia and the Commonwealth following assessment of its draft and supplementary EIS.

In preparing the draft EIS, BHP Billiton consulted with more than 8,300 people, 38 government departments and service providers, 55 non-government organisations and 60 industry groups. This reflects the community and stakeholder consultation performed prior to the expansion. The Company stated that it would commit to changes to processing and tailings management to increase recycling and water efficiency.

The resistance against this project was extensively covered in the media. The Australian Conservation Foundation (2009) described it as a dilemma faced by BHP Billiton to fuel nuclear risks as a uranium quarry or to trade as a copper mine. The Foundation held the position that BHP Billiton should use the mine expansion EIS to set out a path that avoids the risks associated with uranium exports and positions the mine to trade as a copper venture instead. The uranium quarry plan would make BHP Billiton and South Australia complicit in selling uranium to nations focused on nuclear weapons and in unresolved radioactive waste management problems overseas and at the mine site.

There was a concern that if the new open-pit went ahead as proposed, the majority of copper processing would occur in China rather than the current practice of processing all copper on site. BHP Billiton intended to export a uranium-infused copper concentrate, approximately 1.6 million tons a year containing a few thousand tons of uranium and some 400,000 tons of copper. China is the sole market for this radioactive concentrate. This plan would result in BHP Billiton dumping some 1.2 million tons of long-lived radioactive mine waste in China every year. It would also require an

amendment to Australia’s uranium export treaty with China to provide for the unprecedented sale of Australian uranium in concentrates (Noonan 2010).

BHP Billiton did recognise these concerns and provided several statements in regard to the project. These are presented in the table below.

**Table 5.10 Several statements in reports regarding the Olympic Dam mine and expansion**

Reports	Problems and challenges	BHP Billiton’s responses
2011 Sustainability Report	If the operation is expanded, the operation’s demand for water will also substantially increase. (p. 15)	Significant design effort has been undertaken to minimise the impact of this future demand, including the proposed construction of a seawater desalination plant to provide the site with high-quality water. (p. 15)
	<p>While our businesses actively engage with local landholders, there are some challenges for us as a resource company in relation to free prior and informed consent (FPIC). Some of these include:</p> <ul style="list-style-type: none"> <li>• mineral rights are typically vested in the state and host governments may wish to retain the right to determine if and when resources are developed for the benefit of all citizens;</li> <li>• traditional decision making processes are highly variable and may not be deemed appropriate by all parties with an interest in the issue;</li> <li>• conflicting claims of ownership over Indigenous lands can be exacerbated by major resource developments;</li> <li>• there is a suggestion that (FPIC) could be applied at each stage of a resource development, which would create uncertainty for long-term investments;</li> <li>• FPIC could present ethical challenges as it may appear to confer a special set of rights on a group of people who have been</li> </ul>	We are working with the International Council on Mining and Metals (ICMM) to help develop guidelines for ICMM members that address some of the issues arising from the FPIC provisions in the International Finance Corporation standards. (p. 20)

Reports	Problems and challenges	BHP Billiton's responses
	born into a particular class. (p. 20)	
	<b>Developing the Olympic Dam EIS</b> The expansion involves developing a new open-pit mine, which will produce uranium, copper, gold and silver. The process to develop an EIS included holding face-to-face discussions with more than 8,000 stakeholders, ranging from government to industry, community stakeholders and the general public. (p. 20)	As a result of the process, we have proposed a range of project changes including altering the installation method for the desalination plant outfall pipe; committing to using 100 per cent renewable energy in operating the desalination plant and associated pumping; and realigning the access corridor. (p. 20)
2009 Sustainability Supplementary Information	Development of the Draft EIS incorporated extensive consultation over a period of several years. Key issues raised through the consultation process to date include: <ul style="list-style-type: none"> <li>• water use, predominantly in respect of primary water supply from the sea water desalination plant, in particular brine discharge</li> <li>• greenhouse gas emissions associated with the expanded operation</li> <li>• the location of the proposed landing facility and impacts relating to traffic on roads</li> <li>• mining activity, particularly in relation to tailings and operational impacts such as dust and exposure to radiation</li> <li>• content and operation of the Schedule to the Roxby Downs (Indenture Ratification) Act 1982 (as amended). (p. 11)</li> </ul>	BHP Billiton will be responding to all issues raised through a supplementary submission that will be publicly released once completed. (p. 11)
2006 Sustainability Report	With the acquisition of the WMC business in 2005, including the Olympic Dam copper and uranium mine, we recognise that we need to respond to stakeholder concerns regarding uranium management. (p. 6)	While we acknowledge that some of our stakeholders don't welcome the addition of this commodity to our business, we have made a commitment to work with others involved in the nuclear power life cycle to ensure the safe production and secure distribution of this resource. (p. 6)
	In April 2006 BHP Billiton held a stakeholder dialogue at which over 30 participants from NGOs, SRIs, and academics, as well as company personnel, discussed a series of	We will continue to engage on this topic as we develop our strategy to responsible uranium stewardship and embed our role in the supply chain. (p. 124)

Reports	Problems and challenges	BHP Billiton's responses
	<p>issues related to uranium. The forum expressed a strong expectation that BHP Billiton will take a responsible approach to our role in the uranium supply chain. Various views regarding the merit of uranium mining and BHP Billiton's role in the nuclear life cycle were expressed, such as our role in:</p> <ul style="list-style-type: none"> <li>• advocating for stricter international safeguards and social acceptance of uranium</li> <li>• waste management and disposal</li> <li>• developing other energy alternatives</li> <li>• taking a consortium approach to managing surplus uranium</li> <li>• international uranium agreements and policy discussion</li> <li>• the environmental management of the Olympic Dam copper and uranium mine.(p. 124)</li> </ul>	
		<p><b>Radiation safety at Olympic Dam Mine</b></p> <p>The presence of uranium in the mining and processing at Olympic Dam introduces specific challenges associated with radiation safety. Radiation protection is an integral part of all stages of work and includes consideration during exploration, mining, processing, marketing, transport, long-term closure plans and disposal of wastes. Radiation exposure limits are set by international, Australian and State bodies, following the recommendations of the International Commission on Radiological Protection (ICRP) and the International Atomic Energy Agency (IAEA) Basic Safety Standards. Throughout the history of Olympic Dam, no employees or contractors have received a radiation dose above the regulatory limit for mine workers of 20 mSv/y. Our dose control performance</p>

Reports	Problems and challenges	BHP Billiton's responses
		is due to a number of major initiatives at Olympic Dam, such as a major upgrade to the ventilation in the smelter. Public doses to radiation at Olympic Dam are a small fraction of that received from natural sources and are over fifty times under the public dose limit of 1 mSv/y. (p. 125)

The latest update on the expansion was provided by the Company in its 2012 reports. Even though these reports are not covered in this thesis, the excerpts related to the Olympic Dam expansion are important inclusions in the analysis to enable a better understanding of the analysis of the moral development in this case. In the 2012 Annual Report, the Company stated as follows:

**Development projects**

**Olympic Dam**

The proposed expansion of Olympic Dam would be a progressive development requiring construction activity to increase production up to 750 kt per annum (ktpa) of copper, 19 ktpa of uranium oxide and 800 kilo-ounces of gold. On 10 October 2011, the South Australian Government and Australian Commonwealth Government approved the Environmental Impact Statement for the Olympic Dam Project.

We announced on 22 August 2012 that we will not approve the open-pit expansion of our Olympic Dam mine in South Australia in time to meet the Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011 deadline of 15 December 2012. We will investigate a less capital intensive design of the Olympic Dam open-pit expansion, involving new technologies to substantially improve the economics of the project. (p. 27)

While in the 2012 Sustainability Report, the Company stated as follows:

**Committed to broad-based community support**

We require greenfield or significant expansion projects to obtain support from stakeholders before proceeding with development. Such broad-based community support is distinct from achieving FPIC, which we seek when it is mandated and defined by law.

In the instance of the Olympic Dam expansion project, key State and Commonwealth Government approvals have been given for the project. An Indigenous Land Use Agreement (ILUA) relating to the expansion project was signed by all the parties following community meetings held in March 2012 at which the Traditional Owner groups voted in favour of it being executed. However, following a recent review of the business, it became clear that the right decision for the Company and its shareholders was to study an alternative, less

capital-intensive design of the Olympic Dam open-pit expansion that involves new technologies. As a result, the Group is not in a position to approve the Olympic Dam expansion project at this time; nevertheless, we will continue to work with our stakeholders. (p. 25)

From the excerpts, it is clear that the Company decided to delay the expansion and planned to investigate a less capital intensive design involving new technologies to improve the economics of the project. The Company did not comment on sustainability explicitly as the reason for delaying the expansion, creating an impression that the Company considered only the economic aspect of the project. Only when the decision was traced to the Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011 can we find the social responsibility aspect expected from the project. The excerpt of the indenture is presented below:

**Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011—No 49 of 2011**

**Schedule 1—Variation Deed**

Decisions relating to progressing the establishment of an open-pit mine and the particular configuration of the mine and supporting infrastructure will depend on factors including commercial considerations and other assessments undertaken by the Company.

- W. The State agreed to amend the Indenture on the basis of the benefits which the State expects to accrue to the South Australian economy and the community from the proposed development of an open-pit mine at Olympic Dam, including royalty payments, work-force participation and development, local supplier participation, Aboriginal economic development and regional development.
- X. Health, Safety, Environment and Community ("HSEC") issues are of high importance to the Company. The Company's aspiration is that its operations under this Indenture will cause zero harm to members of the public, its work-force and the communities in which it operates and that any environmental impact of those operations is minimised. The Company, in conjunction with the State, intends to continue to take adequate measures to safeguard the public, the work-force and the environment in relation to operations under this Indenture.

Considering the public concerns regarding the Olympic Dam expansion project and the way the Company treated the concerns by providing full disclosure in its reports, including the updated one in 2012, it can be concluded that the Company's moral development is consistent with the stages predicted by the ethics of care.

The first level, orientation to individual survival, is reflected in the company's decision to continue running the mine operation after purchasing the rights from the Western

Mining Corporation, despite of public disagreement. This level was then developed to the first transition period from selfishness to responsibility when the company proposed the plan for expanding the Olympic Dam mine by conducting several stakeholder dialogues and intensive feasibility studies.

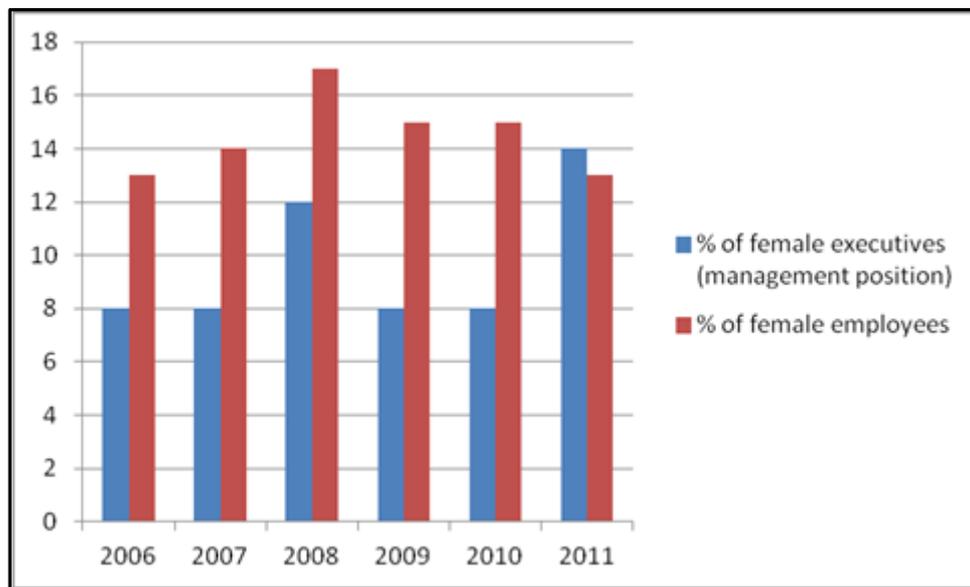
The second level where concern for others becomes the major concern was highlighted in the company's decision to delay the expansion despite approvals from government. It was further developed from goodness to truth, as the second transition, as the company applied the morality of care for others by planning to investigate new technologies and a less capital intensive design for the expansion, which was expected to give economic and social benefits.

The third level, the morality of non-violence, should be manifested when the expansion is performed. If the Company can prove that the expansion does not cause any dangerous radiation or increase the potential for more nuclear weapons, then the third level of moral development is followed consistently. As the period of expansion is beyond the coverage of this thesis, it is not possible to determine the third level application precisely. However, the assumption is made that providing the government and public approves and that there are tight controls along with new and advanced technology to reduce the negative uranium side effect, the company is predicted to have learned the lesson and will not repeat with the mistakes made in the Ok Tedi mine case.

#### **5.2.5 Principle number 5: principle of moral responsibility is reflected in the voices of women**

The application of BHP Billiton's principles seem not to have been influenced by the number of female executives and female staff, as the percentage remains stable and not significant (less than 20%). This is depicted in Figure 5.3.

**Figure 5.3 Percentages of female executives and staff**



Source: Data processed from BHP Billiton's Sustainability Report.

Based on these data, the principle that 'moral responsibility is reflected in the voices of women' as one of the features of the ethics of care, is not apparent at BHP Billiton. However, this is in line with the literature which suggests that moral reasoning is not necessarily attributed to women alone (French and Weis 2000; Simola 2003). Brabeck (1993) also alluded that even though research results suggest that the care concepts may be less sex-specific than Gilligan (1982) had claimed, her major contribution rests in a redefinition of what constitutes an adequate description of the moral idea. In this notion, the ethics of care that Gilligan heard reflected in the voices of women and which exist in the stereotypical beliefs about women, expands our understanding of morality to include concern for interconnection, harmony and non-violence and supplements the obligation covered in the ethics of justice. As Gilligan (1982) argued, 'The failure to see the different reality of women's lives and to hear the differences in their voices stems in part from the assumption that there is a single mode of social experience and interpretation. By positing instead two different modes, we arrive at a more complex rendition of human experience' (pp. 173-174).

The small percentage of women in the workforce is acknowledged by the Company in its report:

*The mining industry has always had a male-dominated workforce, with women generally making up only a small percentage of the total number of employees globally. (2006 Sustainability Report, p. 497)*

### **5.2.6 Principle number 6: distinguished by an emphasis on attachments, issues of self-sacrifice and selfishness and consideration of relationships as primary**

BHP Billiton, through its Sustainability and Annual Reports, has shown the mechanisms for stakeholder engagement and maintaining good relationships with them. Prior to making corporate decisions, the Company made substantial efforts to take into account the opinions of stakeholders in order to commit to broad-based community support.

The emphasis on attachments can also be found literally through the words “care” or “caring” and similar terms, which represent the feminist ethics of care principles. The terms are mentioned several times in the sustainability reports, as these excerpts illustrate:

*To secure and maintain a licence to operate, BHP Billiton must be seen by host communities as a company that protects and **cares** for its people and one able to continue operating within increasingly stringent regulatory frameworks. (2006 Sustainability Report, p. 62)*

*Everyone's behaviour contributes to an injury-free work-place. Leadership, in particular, can have a powerful impact on the transition to an interdependent safety culture. The journey towards Zero Harm requires strong leadership, the involvement of all employees and the need to develop a genuine and active approach to **caring** for all employees, contractors, communities and the environment. (2007 Sustainability Report, p. 175)*

*In some communities where we operate, for example, in South Africa and Mozambique, the incidence of HIV/AIDS is among the highest in the world. We accept a responsibility to help manage the impact of the disease and to **care** for our employees, support the wellbeing and development of our host communities and protect the viability of our operations. (2011 Sustainability Report, p. 7)*

The issues of care, self-sacrifice and selfishness in the corporate setting can be inferred from the necessity to balance the diverse demands of communities and the imperative to protect the environment along with the need to make profit. The task to balance them all is even harder for mining companies as their business attitude seems to prioritise the profit motive only by operating in areas without social legitimacy, causing major destructions and then leaving after the exploitation. Cost-benefit consideration has often

been applied to excuse the damage caused, for the overall financial benefits outweigh other considerations (Jenkins 2004).

BHP Billiton has tried to perform this difficult task by conducting CSR activities under the Sustainability Framework. Several selected cases have been analysed in previous sections to determine whether the Company has been successful in managing the “self-sacrifice” conflicts between the mining industry and CSR.

The cases of the Caroon Coal Project, labour strike, Cerrejon Coal and especially the Ok Tedi mine, are not consistent with the care and self-sacrifice principle, particularly as they ended up in legal proceedings against the Company. Compensation strategies were implemented in certain cases but were not adequate when dealing with the multiple and conflicting demands, let alone in trying to appease communities.

The lack of caring principles in those cases were identified after comparing what the company disclosed in its reports and what the public said in external media. The notion of “everything is okay”, which was reflected in the reports is not consistent with the ethics of care theory and tends to be more in line with the legitimacy theory. The latter theory highlights the social contract between company and community and that companies will adopt certain strategies, including disclosure strategies, to inform the community that they have attempted to comply with the communities’ expectations, created their own “social imagery” and impression to increase their reputation, and effectively handled legitimacy threats (Deegan, Rankin and Tobin 2002). A company can use several strategies to disclose the “reputation threat cases”, including informing stakeholders about intended improvements in performance, seeking to change stakeholders’ perceptions of the event, distracting attention away from the issue and changing external expectations about its performance (Jenkins 2004).

The decisions made by the various communities to take the cases to litigation is also contrary to the ethics of care as the dominant principle applied by BHP Billiton, as the parties tried to seek justice in accordance with law and universal rule. As several cases illustrated disharmony in the company’s relationships with its stakeholders, another

question remains as to the appropriateness of the strategy formulated by the Company to achieve the corporate objective. As growth was mentioned as part of the strategy, there might be an unsynchronised problem between the strategy with its sustainable paradigm in terms of caring for natural assets and dealing with labour strikes.

In the Ok Tedi mine case, the Company took advantage of the weaker legislation in PNG, which resulted in devastation to the local people and the environment. The mere compliance with local laws cannot be considered ethical (especially in the “ethics of care” perspective) if it harms some categories of Company stakeholders.

### **5.2.7 Voluntary nature of CSR activities**

As explained in Chapter 4, two more principles were added in this thesis to the ethics of care in the context of corporate governance. The first additional theme is that the nature of CSR activities should not only be mandatory or compulsory but also, more importantly, voluntary or discretionary (Carroll 1979). The second additional principle is about paying more attention to women’s interests, which is discussed in Section 5.2.8.

BHP Billiton presented the feminist principles of sustainability/CSR, which tend to be genuine rather than obligatory, as noted in the following excerpts:

*As the world’s leading diversified natural resources company, BHP Billiton has a significant opportunity to make a positive contribution to sustainability. We recognise the importance of ensuring our efforts go beyond legislative obligations, to include genuine input from stakeholders about their requirements and concerns through the full life cycle of our operations. (2010 Sustainability Report, p. 2)*

*We recognise that, in recent times, there has been an accelerating shift in societal values and expectations and a corresponding demand for greater corporate accountability. Stakeholders expect transparency in all activities and look to corporations to demonstrate how governance commitments translate into action. This challenge is aptly described by Simon Longstaff, Executive Director, St James Ethics Centre, Australia, and a member of the BHP Billiton Ethics Panel. ‘Corporations are increasingly challenged to demonstrate how they can create societal confidence in their conduct. Regulatory compliance alone is ethically and financially problematic and corporations need to make it clear to society that the sole test for their business conduct approach is not a legalistic one, rather, that they are prepared to take responsibility for their actions without the need for highly regulated direction from government.’ (2007 Sustainability Report, p. 97)*

The “genuine” statements provided in the reports, however, contrast with BHP Billiton’s actual activities. The Ok Tedi mine case is a good example of how BHP Billiton used public-relations strategies rather than changing their practice to be genuinely socially responsible. Genuine attempts to prevent environmental impact might have proved too expensive so managing the relationship with the local people was the preferred option. This was designed to save the Company’s reputation rather than stemming from any moral reasons. BHP Billiton also learned through the process to ensure that the same mistakes would not occur in the future, so they created a detailed project approval process and closure protocol to be completed to the Company’s standards. Even though, in the Ok Tedi mine case, BHP Billiton eventually worked out the best solution, which was less than the liability it could have been subject to, it committed to be “genuine” in the future.

Several cases and disputes with particular stakeholder groups reflect the difficulties BHP Billiton faced in managing its relationships with stakeholders. The cases also showed that it is impossible to please all stakeholders at the same time; all the Company can do is prioritise the interests of certain group(s). The ethics of care offers a contextual and inductive solution for such dispute problems which, in certain cases, prioritise the least advantaged stakeholder (Burton and Dunn 1996). Despite the Ok Tedi mine case and several litigations faced derived from the dissatisfaction of particular stakeholder groups, BHP Billiton has put considerable effort into voluntary CSR activities beyond the mandatory, as shown by several criteria:

- a. BHP Billiton has integrated external engagement that includes a wide variety of activities.. These are not just corporate philanthropy, community programs and political lobbying but also aspects of product design, recruiting policy and project execution. What BHP Billiton should be aware of is the reliance on tools for external engagement in practice, such as a full-time CSR team in the head office without active participation from local management, some high profile (but relatively cheap) initiatives and a glossy annual review of progress (Browne and Nuttall 2013). The goal, as BHP Billiton’s former CEO Marius Kloppers said, is for ‘every single employee, contractor, and supplier to take responsibility for social issues’. The

stakeholder engagement method adopted in the Company encourages those affected by the Company's decisions to get involved in the decision process, as required by a feminist perspective.

- b. BHP Billiton has provided chances for its employees to get involved in various CSR activities. In 2000, it offered an option for an employee-volunteer program to acknowledge the contribution many employees were already making to the community. It also has a Matched Giving Program to increase employees' personal community contributions by giving a matching dollar amount to the community organisation that employees support, either through volunteering, fund-raising or cash donations.
- c. As part of the CSR policy, BHP Billiton has made a commitment to the UN Universal Declaration of Human Rights and the UN Global Compact. Along with several community services in education, health, environmental and social areas, BHP Billiton has been involved in many voluntary CSR activities. Whether the intention is a genuine moral responsibility, or just a response to reputational threats, still needs more investigation.
- d. BHP Billiton has supported and adhered to several voluntary initiatives and public commitments in various roles, as follows:

- 1. International Council on Mining and Metals (ICMM)**  
Founding member of ICMM and deputy chair in FY2011.
- 2. United Nations Global Compact**  
Signatory to the UN Global Compact since 2003 and is committed to its 10 principles.
- 3. Extractive Industries Transparency Initiative (EITI)**  
Supporter of the EITI through our membership of ICMM.
- 4. World Business Council for Sustainable Development – (WBCSD)**  
Member of the WBCSD since 2000.
- 5. The Carbon Disclosure Project**  
Participant in the annual disclosure of climate change information.
- 6. Global Reporting Initiative (GRI)**  
Organisational Stakeholder of the GRI.
- 7. Voluntary Principles on Security and Human Rights (VPSHR)**  
Participant and signatory of the VPSHR.
- 8. Partnering Against Corruption Initiative (PACI)**  
Signatory to the World Economic Forum's PACI Principles for Countering Bribery (PACI Principles). (2011 Sustainability Report)

### **5.2.8 Acknowledgment of women's interests in the employee group and other stakeholder groups**

As has been presented in Chapter 3, CSR as the further extension of the stakeholder model of corporate governance lies within the broader field of sustainability in which a company addresses social and environmental impacts in a variety of ways. The interests of women in the employee group and other stakeholder groups are also addressed in CSR programs in the form of a gender equality agenda to respond to the growth in the participation of women in the workforce and the demand to empower women in the communities that are affected by BHP Billiton's operations. The gender equality agenda covers several issues including sexual discrimination in the workplace, work-life balance, equal participation of women and men in decision making processes, gender diversity policies and gender equality in access to goods and services (Grosser 2009).

Even though women are not explicitly mentioned as a stakeholder, BHP Billiton's employment policy reflects the work-life balance opportunities for all employees, which is in line with the nurturing and caring principles as suggested by the feminist ethics of care. The work-life balance policy is represented as follows:

#### **1. Paid parental leave extension**

*In May 2009, we announced changes to our parental leave policy as a means of encouraging a more effective balance between family and work responsibilities following the birth or adoption of a child. We have extended the minimum paid parental leave period to 18 weeks for the primary caregiver in all of the countries in which we operate. (2009 Sustainability Summary Report, p. 8)*

#### **2. Flexible work arrangements**

##### *Work/Life Balance*

*The Company recognises that employees have a wide range of personal obligations that can have an impact on their ability to balance work and personal life demands. The global nature of our operations also poses specific challenges for some employees. We endeavour to implement policies and practices that help employees to balance these demands; and, wherever appropriate, businesses consider flexible work arrangements in the context of their requirements. (2008 Sustainability Report, p. 169)*

#### **3. Support for family commitment**

*Several options are available to assist employees in balancing the competing demands of their work and personal lives....  
BHP Billiton respects and supports employees' commitment to their families and recognises that employees have a wide range of personal obligations and that these obligations can have an impact on the ability to balance work and personal life demands. (2006 Sustainability Report, p. 469)*

The application of “genuine” CSR can also be evidenced in BHP Billiton’s mandate that their suppliers’ corporate responsibility management be consistent with BHP Billiton’s Code of Business Conduct and HSEC Management Standards. This includes zero tolerance of child labour and the inhumane treatment of employees, outlined as follows:

*BHP Billiton segments its supplier sustainability requirements into global and local categories based on their risk. The Group’s globally defined zero tolerance requirements cover:*

- *Child labour: children must not be hired to work before completing their compulsory education. The minimum age for entry into employment must not be younger than 15 years of age.*
- *Forced or compulsory labour: the supplier must ensure there is no forced, bonded or involuntary labour.*
- *Inhumane treatment of employees: the supplier must create and maintain an environment that treats all employees with dignity and respect with no threats of violence, sexual exploitation or abuse, verbal or psychological harassment or abuse.*
- *Living wage: wages and benefits must, as a minimum, meet whichever is higher: national legal standards or local industry benchmarks. Where no minimum wage legislation exists, the supplier must seek to establish a wage that ensures an adequate standard of living for all of its employees and their dependants. (2009 Sustainability Supplementary Report, p. 23)*

Despite the small percentage of female executives and staff, BHP Billiton supported the gender diversity policy which is applied through encouraging new female graduates into the workforce and through the leadership program to enhance female executives’ capabilities, as follows:

*We are striving to achieve diversity, in all its forms, at all levels of our organisation. Our Board of Directors, for example, is made up of 12 members, who represent seven nationalities. Two members are female, 10 are aged 50 and over and two are aged between 40 and 49 years. (2011 Sustainability Report, p. 9)*

The gender diversity policy includes an emphasis on equal and fair treatment, including in the remuneration policy, as follows:

*We believe that during the reporting period, our employees working in our wholly owned or controlled sites earned greater than the stipulated minimum wage in the countries where they worked. The Company’s remuneration policy and practices do not differentiate based on gender. (2008 Sustainability Report, p. 176)*

*During the year, we also reviewed pay equity based on gender across our senior management\* population, which revealed a female to male salary ratio of 1.005:1.000. We are satisfied that our process of remunerating employees in this grouping is based on skills, experience and size of role and is not tainted by structural bias on the basis of gender. Another focus area for us is ensuring that the right gender balance is struck in our graduate intake. (2011 Sustainability Report, p. 9)*

BHP Billiton provides equal chances for women to achieve top positions and hence, remove the glass-ceiling phenomenon. The equality in employment is indicated in its employee policy, as stated in the 2006-2011 Sustainability Reports as follows:

1. All employees have the opportunity to realise their potential and contribute to the achievement of business objectives.
2. Provide a work environment in which everyone is treated fairly and with respect.
3. Employment must be offered and provided based on merit. While the Company hires locally where possible, all employees and applicants for employment should be treated and evaluated according to their job-related skills, qualifications, abilities and aptitudes only. Applicants are treated in line with the Human Resources Standards, the Guide to Business conduct and the Charter values. The right gender balance is ensured in the graduate intake.
4. Decisions based on attributes unrelated to job performance (for example, race, colour, sex, national origin, age, disability, personal associations, religion, political beliefs, union involvement, marital status, sexual orientation, pregnancy, family responsibilities) may constitute discrimination and are prohibited. Equality in employment issues is addressed in the BHP Billiton Guide to Business Conduct.
5. The Company continues to focus on increasing female participation in the Accelerated Leadership Development Program (ALDP).
6. Pay equity based on gender across the senior management population is reviewed. In 2011, the review revealed a female to male salary ratio of 1.005:1. The Company stated that it was satisfied that the process of remunerating employees is done based on skills, experience and size of role and is not tainted by structural bias on the basis of gender.

Two cases are presented in BHP Billiton's Sustainability Reports that represent the employment equality practice, as follows:

### **Employment Equity in South Africa**

To address historical issues of South Africa, which resulted in the majority of South Africans being excluded from participating in the mainstream economy, BHP Billiton South Africa adopted an empowerment strategy of change. This empowerment strategy covers transformation at the levels of ownership, management, sustainable socio-economic development, procurement and employment equity.

We have set targets to increase representation of those people who are included in what are classified as 'designated groups' by the South African Employment Equity Act. Designated groups include African, Coloured, Indian and disabled males and females and white females. (2006 Sustainability Report, p. 477)

### **Building the Profile of Women in The Mining Industry**

The mining industry has always had a male-dominated work-force, with women generally making up only a small percentage of the total number of employees globally. Our Company is striving to increase the richness and diversity of our employee base. Over the last year, we have made significant progress in building the profile of women in our work-force, with a number of significant appointments, some of which are 'firsts' for the Company.

Tina Markovic was appointed General Manager of a major mining operation in September 2005 ... This year, the Queensland Resources Council introduced its Resources Awards for Women to recognise high achievers in the minerals and energy sector. Tina was announced as the winner of the major prize. In accepting the award, she said, 'My career has been very rewarding and exciting, introducing me to different commodities, different roles, different continents and various challenges. This award demonstrates to other women that they can succeed at a senior level in the industry'. (2006 Sustainability Report, p. 497)

Besides acknowledging women's interests in the employee group, BHP Billiton also recognised them in the other stakeholders groups, as presented below.

#### **a. Women as stakeholders in the consumer group**

The issue of women as consumers has not been captured at all in most CSR benchmarks (Grosser 2009). Even though company reporting does not represent company practices, such reporting reveals an interest in gender issues in the marketplace. For BHP Billiton, only the 2006 Sustainability Report presented the issue of women as consumers, even though it was not related to a direct product. On page 53 of the Report, the Company presented a table titled "Our Resources at Work" (see Table 5.11). In the table, the Company presented several products from further processes of direct products that were related to women, such as kitchen utensils from stainless steel material, cosmetics from titanium and jewellery from gold.

b. Women as stakeholders in the community group

The CSR literature of community rarely addresses gender and diversity issues (Grosser 2009). Companies sometimes report community CSR initiatives relating to gender such as donations to breast cancer foundations, but usually such donations are in small amounts or are reported without mentioning the amount. BHP Billiton has presented its community engagement related to women's issues in its Sustainability Reports, as quoted below, although no information of the amounts was presented:

**Helping the local crafters of Zululand create a route out of poverty**

Despite the pressures of increasing westernisation, traditional crafts are being kept alive in South Africa, especially in rural communities of Zululand in northern KwaZulu-Natal, where our Bayside and Hillside aluminium operations are located.

The tourism market is encouraging young village women to learn crafting from their mothers, who are skilled in various age-old handcrafts, including beading and the weaving of *uhashu* (indigenous grass) into baskets, bowls and mats in distinctively African colours. Men and boys also produce items such as sculptures and woodcarvings. (2006 Sustainability Report, p. 513)

**HIV Treatment and Management Programs In Southern Africa**

Since mid-2005, the Company has been sponsoring the establishment of clinical trials to test a potential new vaccine for the treatment of HIV. The clinical trials, taking place over three years, are to be conducted in southern Africa. This initiative is an extension of our involvement in the HIV/AIDS issue, from the implementation of quality programs for our employees and their dependants to community-based activities that offer more widespread impact.

An estimated 140 HIV-infected men and women are targeted for enrolment in the trials, including some who are on anti-retroviral treatment (and will remain on treatment during the trials) and others who are not yet eligible to commence anti-retroviral treatment. (2007 Sustainability Report, p. 166)

**Preventing malaria in children**

A new anti-malarial medicine has been developed specifically for children across the globe.

BHP Billiton has supported Medicines for Malaria Venture (MMV), a unique partnership bringing together key players in the combat against malaria including major international pharmaceutical companies, the World Health Organization, NGOs and the private sector. (2008 Sustainability Report, p. 16)

As shown in several statements disclosed in the Sustainability Report, BHP Billiton has engaged in several community programs that can be classified as health and education programs for women and their families. This represents recognition of women's interests in the community group.

**Table 5.11 Excerpt from BHP Billiton 2006 Sustainability Report  
regarding women as stakeholders in the consumer group**

<b>Customer Sector Group</b>	<b>Oil and Natural Gas</b>	<b>Aluminium</b>	<b>Copper</b>	<b>Gold</b>	<b>Silver</b>
Energy	Fuel, heating, electricity generation	High-tension power lines, wires and cables	Wire and cables, electrical wiring in buildings		
Construction	Carpets, paints, plastics	Door and window frames, wall cladding, roofing, awnings	Plumbing pipes and tanks, roofing, electrical wiring	Gold heat for decoration	Solder
Industry	Electricity generation, transport, furnace fuel	Propellers, motor parts, wires, cables, packaging	Wires and cables, robotics, air conditioning and refrigeration units	Electronics for computers, industrial equipment, aerospace technology, tinted-glass windows	Photographic paper and film, medicines, super conductors
Household appliances	Plastic components, packaging	Components for TV sets, radios, refrigerators and air conditioners	Electrical appliances, telephone cables, microwave equipment, radio and TV sets	Electronic technology	
Personal use	Electricity, fuel for vehicles, fuel for cooking and heating, clothing fabric, plastic toys, pens	Beverage cans, foil wrap, furniture, bicycles, vehicles	Ornaments, telephones, cooking utensils, home heating systems, decorative applications	Jewellery, watches, currency, dentistry, decoration for dinnerware and ornaments	Jewellery, watches, dinnerware and ornaments, mirrors, cutlery, currency, medallions

Source: 2006 Sustainability Report, p. 53.

c. Women as stakeholders in the suppliers group

Many companies now include equality or diversity criteria in contractual requirements with suppliers (Grosser 2009). The supplier diversity programs are usually reported with reference to women and minority-owned suppliers together, which makes it impossible to analyse on specific gender. Some companies also report the issues of non-discrimination among workers in the supply chain, including sexual harassment, discrimination and maternity leave. BHP Billiton did not report the gender diversity issues of suppliers in its 2006-2011 Reports. It only disclosed the supplier policies that were in line with the feminist ethics of care without referring to the gender of the supplier business owners.

**Suppliers**

Our suppliers include businesses local to our operations, as well as large international suppliers. We seek to utilise local suppliers and support these suppliers in enhancing community development opportunities.

To engage with suppliers we perform a supplier segmentation based on a Corporate Social Responsibility risk assessment. Based on this segmentation, we define the appropriate engagement throughout the supplier life cycle. We also require suppliers to identify potential HSEC risks associated with their operations and to minimise any adverse consequences of these risks. (2010 Sustainability Report, p. 4)

**Supplier corporate social responsibility management**

BHP Billiton's globally defined minimum sustainability requirements for suppliers cover:

- the provision of a safe and healthy work-place and adherence to all relevant legislation, regulations and directives in the country of operation;
- respect for freedom of association;
- adherence to the highest standard of moral and ethical conduct;
- compliance with laws;
- non-discrimination. (2010 Sustainability Report, p. 21)

**Supply and human rights**

In addition to incorporating human rights issues in its procedures and policies relating to supplier management, BHP Billiton is committed to the United Nations Universal Declaration of Human Rights. Our Company Charter, *Code of Business Conduct* and Sustainable Development Policy support this commitment. BHP Billiton believes it has not violated the rights outlined in the United Nations Universal Declaration of Human Rights during the reporting period. (2010 Sustainability Report, p. 21)

The disclosures from BHP Billiton's supplier policies shows that they include sustainability requirements and human rights policies that are in line with the feminist ethics of care principles to exercise a caring approach to other parties.

d. Women as stakeholders in the investors group

Investors concerned with gender issues are not adequately provided with such information, even though investors have acknowledged the importance of gender issues, particularly as part of human capital management (Grosser 2009). BHP Billiton seemed to have recognised this issue and has presented information on gender diversity for investors. Besides that, the Company has also included the Socially Responsible Investor as part of its investment community.

BHP Billiton’s recognition of women as stakeholder is represented not only in the texts but also in photographs within the reports. The breakdown of figures relating to pictures across 2006-2011 is presented in Table 5.12.

**Table 5.12 Gendered appearances in 2006-2011 Reports**  
(in terms of number of pictures)

Year	Photos of top managers or division		Photos of employees		Photos of women in community		Photos of women in family and daily life		Total pictures (100%)	
2006	15	14%	15	14%	16	15%	11	10%	57	58%
2007	6	6%	8	7%	6	6%	0	0%	20	20%
2008	9	8%	1	1%	3	3%	3	3%	16	7%
2009	0	0%	1	1%	1	1%	0	0%	2	2%
2010	0	0%	2	2%	3	3%	0	0%	5	5%
2011	0	0%	6	6%	1	1%	0	0%	7	7%
<b>Total</b>	<b>30</b>	<b>28%</b>	<b>33</b>	<b>31%</b>	<b>30</b>	<b>28%</b>	<b>14</b>	<b>13%</b>	<b>107</b>	<b>100%</b>

Sources: summarised from BHP Billiton’s 2006-2011 Sustainability Reports and Annual Reports.

For the period under analysis, BHP Billiton presented 98 photographs that contained women in various activities and positions, classified as top managers or division managers and employees, in the community and with family, or involved in daily-life activities. The pictures of female employees were most common (31% in total), followed by pictures of female top executives and women in the community (28% each). The picture proportion comparison implicitly reveals the Company's attitude to gender issues. By presenting more pictures of female employees compared to top managers and women in the community, BHP Billiton created the impression of a corporate “professional” identity. Interpreted in another way, such pictures might

become the language it uses to attract new employees and retain existing ones, creating the image of a “company of choice” for future and current employees.

The number of pictures BHP Billiton presented decreased from 2006 to 2011 in line with the decline in the number of pages in its Reports. The comparison of pages is provided in Table 5.13.

**Table 5.13 Number of pages comparison**

Year	Sustainability Report	Annual Report
2006	522	88
2007	316	88
2008	190	270
2009	106	280
2010	61	300
2011	48	268

Source: processed from BHP Billiton’s 2006-2011 Sustainability Reports and Annual Reports.

From the pages comparison presented in Table 5.13, it is clear that the number of pages in the Sustainability Reports has declined sharply while for the Annual Reports the opposite has occurred. An email was sent to management to determine the reason behind the substantial reduction in pages. The response (plus the original question) is provided as follows.

---

**Re:BHP Billiton Sustainability Reports**

Tuesday, 2 April, 2013 4:42 AM

From: "Misquita, Marlene MV" [Marlene.V.Misquita@BHPBilliton.com](mailto:Marlene.V.Misquita@BHPBilliton.com)

To: "adekaka2002@yahoo.com" <[adekaka2002@yahoo.com](mailto:adekaka2002@yahoo.com)>

Dear Desi

Thank you for your email regarding our Sustainability Reports.

Our Sustainability Reports are prepared as per the Global Reporting Initiative (GRI) reporting framework and we achieve an A+ reporting status which indicates that we disclose the maximum number of mandatory framework indicators.

A large amount of content that was in our previous reports (eg. Case studies, Sustainability Framework and GRI Index) has now been placed on our website thus allowing us to focus our report on the issues that most material to our audience in a succinct and effective method.

---

---

Kind regards  
Marlene Misquita  
Manager Sustainability Reporting

 Please consider the environment before printing this e-mail

From: noreply@bhpbilliton.com [mailto:noreply@bhpbilliton.com]  
Sent: Monday, 25 March 2013 3:04 PM  
To: BHP Billiton HSEC Enquiries  
Subject: Enquiry for 'Changes in the Sustainability Report pages' From www.bhpbilliton.com

Name:	Desi Adhariani
Enquiry type:	Sustainability
Message:	Hi, I am a PhD student at Victoria University, Melbourne. I am doing a research on BHP Sustainability report and found out that there is a significant reduce in the number of pages from 2006-2011. The pages decrease from 500 to just around 200 pages. I would like to know the reason why company choose to disclose less, please respond to my query
Email:	adekaka2002@yahoo.com
Location:	Australia
Contact number:	0433555178

Considering the unresolved community concerns in several BHP Billiton operations, it seems that the Company still has to extend the reports to disclose fully several issues or provide more extensive information on their website. For instance, the community updated information about Cerrejon Coal, Colombia was not disclosed in the 2011 reports or on the website. This information is important to provide clear explanations of the company's commitment to several recommendations around building relationships with host communities, as disclosed in the 2010 Sustainability Report.

### 5.3 Summary of the results

This chapter has presented the results and interpretation of the qualitative content analysis of BHP Billiton's Sustainability and Annual Reports for the period of 2006-2011 (6 years). The analysis was conducted based on the principles of the feminist ethics of care on corporate governance practices, as discussed in Chapter 3.

It can be concluded that BHP Billiton has not been fully consistent in applying the principles suggested by the ethics of care. The perception of one's self as connected to others principle has been manifested in intensive stakeholder engagement activities and various voluntary CSR programs. BHP Billiton has also substantially acknowledged women's interests in the employee group and other stakeholder groups by applying

gender diversity and gender equality principles. However, the care approaches through communications, contextual and inductive problem solutions and sequential and hierarchical moral development have not been consistent with the ethics of care. The lack of care approaches raises a question mark about moral responsibility as the genuine motive for BHP Billiton engaging in various CSR activities under their Sustainability Framework. The lack of a genuine commitment may become a potential threat to the relationships it has tried to manage with its stakeholders.

#### **5.4 Reliability and validity of the results**

As has been explained in Chapter 4, four criteria in line with the concepts of validity and reliability have been developed in qualitative content analysis to assess the quality of the coding and analysis process. The reliability and validity of the content analysis process and results in this research can be described as follows:

1. Credibility

Credibility is the equivalent of internal validity where all important factors in the research question have been identified. The ways these factors are reflected in the data gathered then are described accurately and completely. All important factors in the first research question of “What are the corporate governance practices applied in a sample company from the feminist ethics of care perspective?” have been considered and translated into the content analysis protocol which guided the data collection process in accordance with concepts of credibility.

2. Transferability

Transferability or external validity is an evaluation of the applicability of findings from one context to another. This thesis involves intensive study of a single setting (case study) where representativeness and external validity are not the main objective. Justification from Seale (2012) is more appropriate for this research for the reduced importance of the external validity because the originality and discovery might be seen as indicators of the quality of qualitative research. It can be said that this research has provided a theoretical generalisation instead of an empirical generalisation, with the findings being applicable within the relevant context.

3. Dependability

Dependability is the replicability and stability in findings after considering the rational and logical changes during repetitions of the study. Interpretations and thematic assignments to ensure dependability were done using the input of one additional coder to verify the researcher's judgments.

#### 4. Confirmability

Confirmability or reliability in qualitative research findings is evaluated by looking at the data instead of the researcher(s) to determine if the conclusions are supported by the data. The conclusions generated from the content analysis have been supported by the data collected in this research.

## CHAPTER 6 QUANTITATIVE OPTIMISATION MODEL, RESULTS AND DISCUSSION

*Feminist theorists are increasingly fond of the term “care”, but have yet to systematically explore its economic implications.*  
(Folbre 1995, p. 74)

Ethics of care principles have been discussed in Chapter 2 and further explored in Chapter 3. The principles are largely based on Gilligan’s (1982) theory, which is further explored for the corporate setting. The principles are as follows:

- a) Care is achieved through perception of one’s self as connected to others.  
This principle is translated into the stakeholder concept from the feminist perspective (Wicks, Gilbert and Freeman 1994), which contains the following interpretations:
  1. Corporations are webs of relationships among stakeholders
  2. Corporations should thrive on chaos and environmental change
  3. Replace conflict and competition with communication and collective action
  4. Strategy as solidarity
  5. Replace hierarchy with radical decentralisation and empowerment
- b) Moral dilemmas are contextual.
- c) Dilemmas are solved through inductive thinking.
- d) Development through stages is sequential and hierarchical.
- e) Principle of moral responsibility is reflected in the voices of women.
- f) Distinguished by an emphasis on attachments, issues of self-sacrifice and selflessness and consideration of relationships as primary.
- g) The nature of the CSR activities should be voluntary or discretionary responsibilities.
- h) Women’s interests in the employee group and other stakeholder groups are acknowledged.

These principles became the guidelines in investigating the corporate governance practices of BHP Billiton from the ethics of care perspective, as presented in Chapter 5. The same principles were also used in developing the optimisation model to project the financial condition of the company, which is presented in this chapter. The financial condition projection model also serves as a proposed model that can be used by

corporate management to establish company goals or objectives and strategies to meet these goals. It becomes the framework to determine optimal corporate financial management strategies, which may include dividend policies, debt structure, capital structure, risk management and liquidity management (Ho and Lee 2004).

The findings and results presented in Chapter 5 were also used in developing the financial planning model to identify necessary variables to be included in the model. This includes the discussion of principles (see Table 6.2) that cannot be translated into the optimisation model and hence are better analysed using qualitative analysis.

This chapter is intended to provide an example of how a company can accommodate the environmental and social costs, in line with the sustainable development vision under the feminist ethics of care, through financial planning strategies. The strategies are illustrated in an optimisation model that describes the strategies a company can apply while maintaining the achievement of corporate objective(s). In one sense, the model development resembles the budgeting development stages. However, the optimisation approach was chosen in this thesis as it addresses the allocation of scarce resources among possible alternative uses in order to achieve the maximisation or minimisation of an objective function. It was also used to provide variety in the accounting research methodology.

Upon completion of the linear programming modelling and solution of the optimisation problem, the pro forma financial data were generated to project the financial conditions of the company to determine the implications of applying the ethics of care at the company level.

The discussion of the proposed model and the interpretation is presented based on the elements of the optimisation or linear programming model, which was discussed in Chapter 4. The properties incorporate objective functions, constraints and decision variables.

In addition, as presented in Chapter 3, the limitations of traditional financial accounting, as identified by Deegan (2010), were addressed and accommodated as much as possible in the developed model. These limitations are that financial accounting:

1. tends to focus on the information needs of stakeholders with a financial interest
2. applies the concept of ‘materiality’
3. adopts the practice of discounting liabilities
4. applies the “entity assumption”
5. excludes from expenses the impacts on resources not controlled by the entity
6. applies the recognition criteria of “measurability” and probability.

The first limitation, which states that conventional financial accounting tends to focus on the stakeholders with a financial interest, has been responded by many companies by voluntarily providing social and environmental information. Specifically, companies in the extractive industries have been under public scrutiny for their poor social performance, such as disregarding the interests of indigenous people. Companies in this industry also receive a great deal of criticism about the environmental impact of their activities (Deegan 2010). The high demand for information about the social and environmental performance of mining companies has been addressed by providing social and environmental reports, the analysis of which has been presented in Chapter 5 as relates to the sample company, BHP Billiton.

### **6.1 Objective function of the linear programming (optimisation) model**

The objective function reflects the multi-period objectives a company wants to achieve. The function can be different from one firm to another. The objective function of the proposed optimisation model was developed based on the first principle of the feminist ethics of care: achieved through perception of one’s self as connected to others, which is translated into the stakeholder concept from the feminist perspective (Wicks, Gilbert and Freeman 1994). In the proposed model, the objective is to maximise stakeholder interests.

To define operationally the maximisation of the stakeholders' interests, this study used the direct economic value retained as the proxy. The direct economic value is an indicator used in the G4 GRI (Global Reporting Initiative) Sustainability Reporting to report the economic dimension of sustainability. This concerns the organisation's impact on the economic conditions of its stakeholders and on economic systems at local, national and global levels (Global Reporting Initiative 2013). The economic category indicator illustrates the flow of capital among different stakeholders and the main economic impacts of the organisation throughout society. Even though the economic value retained was used in this study, it was not designed to limit other measurements that could be used in developing certain models. Other researchers can use other variables for the operational definition.

Based on the GRI guidelines, the direct economic value generated and distributed (EVG&D) was reported on an accruals basis, including the basic components for the organisation's global operations as listed below:

Direct economic value generated: Revenues.

a. Economic value distributed:

- payment to suppliers and contractors;
- employee wages and benefits;
- payments to providers of capital;
- payments to government (by country); and
- community investments.

c. Economic value retained is then calculated as "Direct economic value generated" less "Economic value distributed")

Hence, the objective function of the proposed model is:

<b>Maximise <math>\sum_{t=1}^T</math> economic value retained<sub>t</sub></b>
---

As explained in Chapter 4, the data for the period of six years (2006-2011) were used to project the financial condition of the next five years (2012-2016). This six-year period was determined arbitrarily to match the period used to investigate the qualitative content analysis as presented in Chapter 5.

Environmental contributions were also added in this thesis to include the environment as one of the stakeholders, as explained in Chapter 3. The derivation of the objective function is provided below.

$$= \text{Max } \sum_{t=1}^T \text{economic value generated and distributed}_t$$

In BHP Billiton's Sustainability Report, the economic value generated and distributed is further broken down into detail as follows.

$$= \text{Max } \sum_{t=1}^T (\text{Revenues and other income}_t - \text{Payments to suppliers and contractors}_t - \text{Wages and benefits to employees}_t - \text{Shareholder dividends}_t - \text{Interest payments}_t - \text{Gross taxes and royalties}_t - \text{Voluntary contributions of funds in the broader community}_t - \text{Total environmental expenditure}_t)$$

From the detailed definition above, it was acknowledged that the economic value for regional economies is generated through revenues, operating costs, employee compensation, donations and other community investments, retained earnings and payments to capital providers and to governments. The explanation for several items was provided in the 2011 Sustainability Report (p. 22) as follows:

1. Revenues include other income amounts. Amounts include revenues and costs attributable to jointly controlled entities and are consistent with the Group's financial reporting of elements comprising Underlying EBITDA. Underlying EBITDA is earnings before net finance costs and taxation, jointly controlled entities' net finance costs and taxation, exceptional items and Group and jointly controlled entities' depreciation, impairments and amortisation. The amounts are determined on an accruals basis and extracted from the audited financial statements.
2. Operating costs relate to expenses recognised in the financial statements. It includes expenditure paid to suppliers and contractors for materials and services and excludes community investment expenditure.
3. The interest payments are interest expense on debt for BHP Billiton controlled entities and jointly controlled entities, determined on an accruals basis.
4. Gross taxes and royalties comprise income tax and royalty-related taxes paid, royalties paid in kind and production-based royalties accrued which approximate cash payments.

## 6.2 Decision Variables

Decision variables are those in the objective function that will be computed and become the outputs of the linear programming model. The decision variables in this model were defined as follows:

- a. The amount of payment to suppliers and contractors ( $PSC_t$ );
- b. The amount of employee wages and benefits in a particular year ( $EWB_t$ );
- c. Dividend amount in a particular year ( $Div_t$ );
- d. Long-term debt amount in a particular year ( $LTD_t$ );
- e. The amount to pay to government in a particular year ( $PG_t$ );
- f. The amount of the contributions to community in a particular year ( $CC_t$ ); and
- g. The total environmental expenditure in a particular year, comprising the following variables:
  1. Environmental research expenditure ( $ERE_t$ )
  2. Environmental costs ( $EC_t$ )
  3. Environmental program expenditure ( $EPE_t$ )
  4. Biodiversity and land management ( $BLE_t$ )

In addition to the decision variables in the objective function, the proposed model also contains decision variables in the constraint functions (see Section 6.3 for the definition and description of the constraint functions). This is because the variables are not directly related to the objective function but are related to the financial policies under the ethics of care.

The decision variables in the constraint functions are as follows:

- a. After tax profit ( $ATP_t$ )
- b. Investments in financial assets ( $InvFA_t$ )
- c. Investments in capital assets ( $InvCA_t$ )
- d. Total environmental fines amount ( $TEF_t$ )
- e. Provision amounts related to sustainable activities ( $Prov_t$ )
- f. Health, safety, environmental and community expenditure ( $HSEC_t$ )

- g. Communication expenses (Comm. Exp<sub>t</sub>)
- h. Litigation proceeding amount (LitExp<sub>t</sub>)
- i. Female recruitment expenses (FRE<sub>t</sub>)
- j. Female leadership program expenses (FLP<sub>t</sub>)
- k. Research development expenses (R&D<sub>t</sub>)
- l. Work-life balance policy amount (WLB<sub>t</sub>)
- m. Costs of employee turnover (CTO<sub>t</sub>)
- n. Women empowerment program expenses (WEP<sub>t</sub>)

In this proposed model, the amounts of the decision variables are to be decided by a company to achieve the objective function with scarce or limited resources named constraints. Since the amount of decision variables as the results of the model are computed using a mathematical technique, namely linear programming, managerial discretion and judgement still has to be used in applying the model to complement the mathematical results.

### **6.3 Constraints functions of the linear programming (optimisation) model**

In achieving the objective function, a company faces many constraints due to the limited amount of resources or because of the regulatory environment, external restrictions from the accounting equation and internal restrictions reflected in company policies, such as liquidity and leverage policy.

There are three sets of constraints in the proposed model as listed below:

1. Accounting definitional constraints
2. Investment constraints
3. Policy constraints derived from the corporate governance practices from the feminist ethics of care perspective.

#### **6.3.1 Accounting definitional constraints**

Accounting definitional constraints come from the relationships between accounts in the Statements of Financial Position, Statements of Comprehensive Income and Statements of Changes in Equity. The constraints have nothing to do with the ethics of care

principles but represent the relationships between accounts in current accounting practice and standards. Hence, it is implicitly stated that the application of the ethics of care is not intended to replace the current and existing accounting practice as a whole.

In this proposed model, the accounting definitional constraints are as follows:

1. Payments to government

$$\text{Payments to government}_t = \text{Gross taxes}_t + \text{Other Payments}_t$$

$$\text{PG}_t = (\text{tax rate} \times \text{Profit before tax}_t) + \text{Other Payments}_t$$

$$\text{PG}_t = \text{tax rate} \% (\text{EBIT}_t - i_t \text{LTD}_t) + \text{Other Payments}_t$$

where:

$i$  is the interest rate applicable to the long-term debt (or interest-bearing liabilities),

EBIT is the Earnings before Interest and Taxes,

LTD is the Long-Term Debt.

2. After-tax profit definition

$$\text{After - tax Profit}_t = (1 - \text{tax rate}) (\text{EBIT}_t - \sum_{t=1}^5 i \times \text{Long Term Debt}_t)$$

### 6.3.2 Investment constraints

The investment constraints represent the use of a company's funds to invest in certain projects. A company can make investment decisions in financial assets (purchasing shares in other companies) and in capital assets (such as in property, plant and equipment).

For investment in shares, the socially responsible investment (SRI) concept is in line with the ethics of care perspective. As an ethical investment concept, the SRI guides investors to select securities by considering the social, environmental and institutional ethics aspects in financial decision making and allocate financial resources based on the societal impacts of the funded entities. This is consistent with the ethics of care principle, giving attention to stakeholders' interests, including the community and the environment.

For investments in capital assets, since the feminist ethics of care perspective was used in this study, it was necessary to select the investment or capital budgeting criteria for

company's decision making as this represents the sustainability strategy a company adopts in line with the ethics of care. Current trends in the sustainability agenda show that the measuring and communicating of the returns of an organisation's sustainability strategy can be performed using the social rate of return (SROI—Social Return on Investment) (Ernst & Young 2013). Hence, SROI is used to determine the amount of investments rather than the usual ones, such as the internal rate of return (IRR), return on assets (ROA) or return on investment (ROI).

The SROI represents the social benefits and costs of a company's operations in dollar terms, relative to the investment or financial costs required (Lingane and Olsen 2004). This approach was developed by the Roberts Enterprise Development Fund (REDF) and was tested by the New Economics Foundation (NEF 2004) (Rotheroe and Richards 2007). The technique is based on the cost-benefit analysis and is used to measure the value of social benefits created by an organisation, relative to the cost of achieving the benefits. In the proposed model, the accounting definitional constraints are as follows:

### 3. Payments to government

$$\text{Payments to government}_t = \text{Gross taxes}_t + \text{Other Payments}_t$$

$$\text{PG}_t = (\text{tax rate} \times \text{Profit before tax}_t) + \text{Other Payments}_t$$

$$\text{PG}_t = \text{tax rate} \% (\text{EBIT}_t - i_t \text{LTD}_t) + \text{Other Payments}_t$$

where:

$i$  is the interest rate applicable to the long-term debt (or interest-bearing liabilities),

EBIT is the Earnings before Interest and Taxes,

LTD is the Long-Term Debt.

### 4. After-tax profit definition

$$\text{After - tax Profit}_t = (1 - \text{tax rate}) (\text{EBIT}_t - \sum_{i=1}^5 i \times \text{Long Term Debt}_t)$$

The steps used in calculating SROI were provided by Lingane and Olsen (2004) and were used for a fictional example company that employs formerly homeless people and provides health care to its employees, resulting in a reduction of visits to emergency rooms per year. The company produces a polyurethane (PUR) foam recycling technology that enables PUR foam makers to purchase fewer chemicals per year, resulting in fewer emissions in the production of those chemicals, among other benefits.

For the purposes of a simplified example, it is assumed that there are no negative social cash flows. The steps used were as follows:

1. Quantify non-financial impact of operations per unit.  
 For example, 10% reduction in emergency room visits = 150 fewer visits per year;  
 6% reduction in CO<sub>2</sub> emissions per year = reduction of 12,000 tons CO<sub>2</sub>.
2. Translate the impact into dollar terms per unit to achieve “social cash flows.”  
 Cost per visit is \$250. Cost savings from 150 fewer visits per year = \$37,500/year;  
 Cost per ton CO<sub>2</sub> is \$1.25 based on regional emissions trading markets. Cost savings from reduction of 12,000 tons CO<sub>2</sub> per year = \$15,000.
3. Sum all social cash flows for the horizon or periods.  
 In this example, the annual social cash flow is \$37,500 + \$15,000 = \$52,500. A five-year period is usually used for projections to proceed to step 4.
4. Discount the social cash flows to present value using an appropriate discount rate (20% in this example).

<b>Year 1</b>	<b>Year 2 ...</b>	<b>Present value of social cash flows</b>
$52,500/(1+0.20) +$	$52,500/(1+0.20)^2 +$	<b>Years 1-5</b>
	<b>=</b>	<b>\$157,007</b>

5. Calculate the SROI by dividing the sum of present value by the initial investment.  
 For instance, if the investment is \$100,000 then the SROI is 1.57 (157%).

The net present value is tracked or forecast using a range of discount rates over a given time period to determine the SROI. Rather than attempting to quantify and capture all the benefits, the SROI analysis just estimates the cost savings or revenue contributions from successful program(s) run by a company. The tracking and quantifying of the positive and negative social and environmental impacts or externalities require transparent and comprehensive accounting systems to enable the measurement of social value a company has created. Whenever possible, this requirement should be conducted by extracting the available data in financial statements. Otherwise, reasonable estimates should be used, especially if the impacts cannot be accurately monetised. It should be noted, however, that as with ROI, SROI cannot be used in a vacuum; it only provides a benchmark figure to be considered in decision making (Lingane and Olsen 2004). This

implies that in final investment decision making, a company can use and compare the ROI, SROI and other measurement tools as the capital budgeting criteria. The use of SROI in the proposed model does not limit the use of other measures in decision making.

The investment constraints for the proposed model are as follows:

1. Investments in financial assets

It is assumed that investments in financial assets should be at least the same as in the previous year and allocated to companies with sound social and environmental track records that pay attention to certain issues such as human rights, labour standards, equal opportunities, environmental protection, consumer safety, community concerns and stakeholder relations.

$$\text{Investment in financial assets}_t \geq \text{Investment in financial assets}_{t-1}$$

2. Investments in capital assets

The investments in capital assets are targeted to grow at a certain rate of investment in those assets since the previous year.

$$\text{Investments in capital assets}_t - \rho \text{Investments in capital assets}_{t-1} \geq 0$$

where  $\rho$  is  $1 + \text{SROI}$  projected from previous period. It represents the rate of investment growth.

### **6.3.3 Company's policy constraints derived from the corporate governance practices from the feminist ethics of care perspective**

The policy constraints were mostly derived from the interpretation of corporate governance practices from the feminist ethics of care perspective as explained in Chapter 3.

Under the ethics of care, corporations are viewed as webs of relationships among stakeholders. As the optimisation model uses the accounting data, the application of the caring principle of the feminist ethics of care to the stakeholders' interests, including the environment, may face the second limitation of financial accounting identified by Deegan (2010); the concept of materiality. Given the difficulty of quantifying the social

and environmental costs (even if they can be measured, the amounts are often small), this tends to preclude the reporting of social and environmental information because, individually, the expenditure is not considered to be material. Several examples of the “immaterial” amounts include environmental fines and the difficulty of accurately measuring the direct financial impact caused by an oil spill. The policy constraints in the proposed model do not follow the materiality concept; hence, they include several relevant constraints, even though they are not material. In this notion, the nature of the transaction is more important than the amount. Because the nature of the account is relevant for social and environmental reporting, the amount should be reported even though it is not material in amount. This also represents the fairness principle of accounting, that materiality also involves a nature test.

The materiality concept which is addressed in the model also implies that the externalities caused by the reporting entity are not ignored, which contradicts the entity assumption (the fourth limitation identified by Deegan 2010). In this assumption, financial performance and position are measured for each entity, independently of all other entities. This implies that a transaction or event, including the externalities that do not directly affect the entity, can be ignored for accounting purposes, making performance measures (such as profitability) incomplete from a broader societal point of view (as opposed to a “discrete entity” perspective) (Deegan 2010). The recognition of externalities in financial statements also represents the inclusion of social and environmental costs of any impact on resources not controlled by the entity (the fifth limitation identified by Deegan 2010).

The limitation of discounting liabilities in traditional financial accounting is also addressed in the model, as it is not in line with the sustainability agenda suggested by the ethics of care. The discounting practice tends to make future expenditure less significant in the present period. Gray, Owen and Adams (1996) argue that this practice tends to downplay the future environmental expenditure of a remedial nature (future clean-up) and shifts social and environmental problems on to future generations. This is not consistent with the sustainability agenda. This limitation is accommodated in the proposed model even though, generally, there is no accounting standard that relates

specifically to environment-related liabilities in Australia. However, general guidance was provided in the conceptual framework and Accounting Standard AASB 137 Provisions, Contingent Liabilities and Contingent Assets are used to recognise the obligations relating to environmental performance as either provisions or contingent liabilities, depending upon the circumstances (Deegan 2010). Such remediation costs and liability should be accounted for throughout the life of an operation and be recognised not only when there is a legal requirement of site remediation, but also based on usual prudent business practices that suggest that remediation should be conducted.

Measurement of the carrying amount of a provision is provided for in AASB 137, stating that the provision must be the present value at the end of the reporting period of the expected cash flows. Paragraph 47 of AASB 137 states that the discount rate should be a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the liability. Professional judgement is definitely needed in determining the discount rate applicable to the company, as measurement still becomes the criterion to recognise any liabilities and expenses (the last limitation of the traditional financial accounting identified by Deegan 2010). The statement made by Lamberton (2000) that accounting for sustainable development is still in the exploration stage resonates with this condition, as what should be measured is the focus rather than the precision of measurement.

The constraints then become as follows:

1. Payments to suppliers and contractors (PSC<sub>t</sub>)

$$\text{Payments to suppliers and contractors}_t - \delta \text{Payment to suppliers and contractors}_{t-1} \geq 0$$

The payments to suppliers and contractors for goods and services acquisition are expected to increase at least at a rate projected by  $\delta$  which is defined as 1 + the average ratio of the payments to revenue in the previous periods.

2. Employee wages and benefits amount (EWB<sub>t</sub>)

$$\text{Employee wages and benefits}_t - \gamma \text{Employee wages and benefits}_{t-1} \geq 0$$

$\gamma$  is defined as 1 + the average ratio of the employee wages and benefits /revenue in the previous periods.

It is projected that the employee wages and benefits will increase at least at a rate of  $\gamma$  compared to the previous year.

3. Dividends policy ( $Div_t$ )

Dividends are expected to grow at a constant annual rate, which should be at least stable at a certain minimum dividend growth rate.

$$Div_t - \theta Div_{t-1} \geq 0$$

where  $\theta$  is 1 + the dividend growth rate at the last periods.

4. Total environmental fines amounts

The ratio of total fines for breaching environmental regulation to the amount of environmental program expenditure should be less than or equal to the minimum ratio in the previous years (represent here as X).

$$\frac{\text{Total environmental fines}_t}{\text{Environmental program expenditure}_t} \leq X$$

5. Provision amounts

Provision amounts related to sustainable activities in the balance sheet (such as the closure, rehabilitation and restoration costs) should be growing at least at the average of provision growth in the previous years (represented by  $\epsilon$ ).

$$Provision_t - \epsilon Provision_{t-1} \geq 0$$

where  $\epsilon$  is 1 + the average of provision growth rate in the previous periods.

Beside the constraints to accommodate the limitations identified by Deegan (2010), the policy constraints also comprise the risk management aspect that reflects the principle that corporations should thrive on chaos and environmental change. The risk management constraints relate to the amount of long-term liabilities that a company should maintain in order to ensure liquidity, its interest and debt-paying capacity. The other risk management constraints represent the application of the ethics of care to the risk management aspect of corporate governance in the form of social and

environmental risk management. Constraints of several expenditure amounts that reflect the social and environmental risk management in monetary terms are therefore provided. The constraints in the risk management area are as follows:

6. The interest coverage

The interest coverage should be at least equal to the minimum interest coverage multiplier in the last periods (represented by Y).

$$\frac{EBIT_t}{i \times LTD_t} \geq Y$$

7. Current ratio

Current ratio is maintained at a minimum of the average ratio in the last periods.

$$\frac{CA_t}{CL_t} \geq \text{Average} \sum_{t=1}^T \frac{CA}{CL}$$

8. Environmental research expenditure (ERE<sub>t</sub>)

Expenditure related to participation in research and policy development on reducing the climate change impacts, reducing energy and greenhouse gas emissions, water reporting and accounting, product and by-product impacts to nature and other efforts in collaboration with government or other institutions should be at least the same as in the previous year.

$$ERE_t \geq ERE_{t-1}$$

9. Environmental costs ( $EC_t$ )

The costs of energy, greenhouse gas emissions, water use and other climate change costs are expected to decrease across the average rate of changes in the previous periods. The decrease is symbolised as  $\phi$  which is defined as  $1 - \text{average rate of change}$ .

$$\text{Environmental costs}_t - \phi \text{Environmental costs}_{t-1} = 0$$

10. Biodiversity and land management expenditure ( $BLE_t$ )

Biodiversity and land management expenditure is expected to be enhanced and, hence, the expenses and costs related to them are expected to be higher than in the previous period or at least the same.

$$BLE_t \geq BLE_{t-1}$$

where BLE is biodiversity and land management expenditure.

11. HSEC risk management program expenditure

The expenditure of risk management programs to mitigate HSEC incidents or accidents are assumed to be higher than, or the same as, the certain percentage of operating expenses in 2012 and increase at certain percentage rates afterwards.

$$\text{HSEC risk program}_t \geq \text{HSEC risk program}_{t-1}$$

The proposed model also has other constraints that reflect the caring principle of the feminist ethics of care, replacing conflict and competition with communication and collective action to discuss and solve certain problems with any stakeholders. Informal dispute resolution, through extensive communications, can produce flexible outcomes, retention of confidentiality, time and cost savings and reputational enhancement rather than disputes which tend to be unnecessary and counter-productive (Francis and Armstrong 2003). Having said that, formal resolution through legal proceedings is still needed, representing the application of the ethics of justice as complementary to the ethics of care. However, the extensive communication with stakeholders is encouraged under the ethics of care, and hence, it is expected that the litigation costs could be reduced.

The methodology used in this thesis did not involve direct interviews with management of the sample company or questionnaires, therefore a set of assumptions was used to estimate the amount needed to solve the model. The constraints are as follows:

#### 12. Communication expenses

The communication expenses required to discuss and solve problems with any stakeholders should increase at least to the average of communication expenses to total operating expenses ratio in the previous years.

$$\text{Communication expenses}_t \geq \left( \text{Average } \sum_{t=1}^T \frac{\text{Communication expenses}}{\text{Total expenses}} \right) \times \text{Total expenses}_{t-1}$$

#### 13. Litigation proceedings amounts

The litigation proceedings amount to solve problems with stakeholders should be less than or at least the same as the lowest amount in the previous periods.

$$\text{Litigation expenses}_t \leq \text{Lowest litigation expenses}_{t=1}^T$$

The ethics of care also suggests that the principle of moral responsibility tends to be reflected in the voices of women. This principle is evident in gender diversity policies that ensure the participation of women in a company's workforce. In the optimisation model, this can be translated into various programs, including recruitment of female employees, supporting the education of female students to become future employees, conducting leadership and mentoring programs for future female leaders in the executive and senior management levels. The policies can further be translated into monetary amounts in particular constraints as follows:

#### 14. Female recruitment expenditure

It is expected that a company will increase the recruitment expenditure to recruit female employees (including any education program for graduates) compared to the previous year at least at a rate equal to the average ratio of such expenditures to operating expenses. The increase in expenses is not only due to the inflation factor but mainly due to a company's commitment towards gender diversity in its workforce.

$$\text{Female recruitment expenses}_t \geq \left( \text{Average } \sum_{t=1}^T \frac{\text{Female recruitment expenses}}{\text{Total expenses}} \right) \times \text{Total expenses}_{t-1}$$

15. Expenditure for leadership and mentoring programs for future female leaders

It is targeted that the expenditure for the leadership and mentoring programs be higher or at least the same as in the previous year.

$$\text{Female leadership program expenses}_t \geq \text{Female leadership program expenses}_{t-1}$$

The other principle of corporate governance practice from the ethics of care perspective is the voluntary or discretionary nature of CSR activities. This is translated into the model as the amounts a company spent on its CSR activities. The constraints that represent this principle are as follows:

16. Research and development expenses

Research and development expenses for CSR activities should be stable at least as an average proportion of R&D expenses/Operating expenses in previous periods (represented by  $\epsilon$ ).

$$\text{R\&D expenses}_t \geq \epsilon \text{Total expenses}_{t-1}$$

17. Community contributions and environmental program expenditure ( $CC_t$  and  $EPE_t$ )

Community contributions and environmental expenditure should be at least a certain percentage of pre-tax profit (represent here as  $Z$ ).

$$\text{Community contribution}_t \geq Z\% \text{Pre - tax profit}_t$$

$$\text{Environmental program expenditure}_t \geq Z\% \text{Pre - tax profit}_t$$

The environmental program expenditure is different from the environmental costs to tackle the climate change impact in constraint 11, as the former is the contribution towards environmental programs as part of a voluntary CSR program, while the latter is attributed to social and environmental risk management.

The last principle which is related to women's interests is also included in the model constraints. The gender equality agenda can be translated into several financial policies such as equal pay for women and work-life balance policies through paid parental leave, child-care facilities or arrangements provided by a company, and child benefits. The

constraints also include the benefit of such policies in terms of the cost savings from a decrease in labour turnover. The constraints are as follows:

18. Equal pay for women employee

$$\text{Female employees wages rate}_t - \text{Male employees wages rate}_t = 0$$

19. Work-life balance policy

$$\text{Work – life balance policy expenses}_t \geq \text{Work – life balance policy expenses}_{t-1}$$

The work-life balance policy expenses comprise paid parental or maternity leave expenses, child-care facilities expenses (including the salary of the child-care workers, facilities maintenance expenses and purchase expenses of the supplies and tools), child benefits and/or other work-life balance policy expenses in accordance with the company's policy.

In this model, the pertinent expenses related to work-life balance are budgeted to be at least the same as in the previous year. Such expenses will depend on the number of employees who will utilise the policy.

20. Cost savings from a decrease in employee turnover

According to Cascio (1991), costs of turnover consist of separation costs, replacement costs and training costs. Separation costs include the exit processing expenses and separation pay. Replacement costs are related to the recruitment of new employees, which consist of the job advertisement expenses, selection interviews and pre-employment administration expenses. Training costs include the training material expenses, equipment, trainer salary and other related expenses to develop the employees in certain and specific skills.

If a company can manage the employee turnover, there will be cost savings created and it is targeted that the turnover costs should be less than or at least the same as in the previous period. Hence, the constraint becomes:

$$\text{Costs of employee turnover}_t \leq \text{Costs of employee turnover}_{t-1}$$

Since the training and development expenses are intended to develop all employees, not only the ones who left the company, the constraint should be broken down into detail to reflect the expenses which are related to employee turnover. The constraint is further detailed as follows:

$$\left(\frac{\overline{SC}}{E} + \frac{\overline{RC}}{NE} + \frac{\overline{TC}}{E}\right) \times \overline{ETR} \times E_t \leq \left(\frac{\overline{SC}}{E} + \frac{\overline{RC}}{NE} + \frac{\overline{TC}}{E}\right) \times \overline{ETR} \times E_{t-1}$$

where:

$\frac{\overline{SC}}{E}$  is the average amount of separation costs per number of employees in the previous periods

$\frac{\overline{RC}}{NE}$  is the average amount of replacement costs per number of new employees in the previous periods

$\frac{\overline{TC}}{E}$  is the average amount of training costs per number of employees in the previous periods

$\overline{ETR}$  is the average employee turnover rate in the previous periods

$E_t$  and  $E_{t-1}$  are the numbers of employees at year t and previous year t-1

Besides paying attention to women in the employee stakeholder group, other programs and policies can also be arranged for women's interests in the community group. For instance, certain policies to support and encourage women's empowerment in the community in the form of education programs, leadership support and health services can be provided by a company. To run such programs and services, a company needs adequate funds and this can be translated into a constraint as follows:

## 21. Expenses for women's empowerment program in the community group

It is targeted that the women's empowerment program expenditure be higher or at least the same as the average amounts of expenditure in the previous periods.

$$\text{Women empowerment program}_t \geq \frac{\text{Women empowerment program}}{\text{Community contributions}}_t$$

where  $\frac{\text{Women empowerment program}}{\text{Community contributions}}$  represents the average portion of the empowerment program expenditure to community contributions amount in the previous period.

A summary of the proposed model is provided in Table 6.1.

**Table 6.1 Quantitative Optimisation Model for Financial Planning based on the Ethics of Care Principles of Corporate Governance**

---

**I. Objective-Function**

Maximise  $\sum_{t=1}^T$  **economic value retained**<sub>t</sub>

**II. Decision Variables**

**II.a Decision variables in the objective function**

- a. The amount of payment to suppliers and contractors (**PSC**<sub>t</sub>);
- b. The amount of employee wages and benefits in particular year (**EWB**<sub>t</sub>);
- c. Dividend amount in particular year (**Div**<sub>t</sub>);
- d. Long-term debt amount in particular year (**LTD**<sub>t</sub>);
- e. The amount to pay to government in particular year ( **PG**<sub>t</sub>);
- f. The amount of the contributions to community in particular year (**CC**<sub>t</sub>); and
- g. The total environmental expenditure in particular year which comprises of:
  1. Environmental research expenditure (**ERE**<sub>t</sub>)
  2. Environmental costs (**EC**<sub>t</sub>)
  3. Environmental program expenditure (**EPE**<sub>t</sub>)
  4. Biodiversity and land management (**BLE**<sub>t</sub>)

**II.b Decision variables in the constraint functions**

- a. After tax profit (**ATP**<sub>t</sub>)
  - b. Investments in financial assets (**InvFA**<sub>t</sub>)
  - c. Investments in capital assets (**InvCA**<sub>t</sub>)
  - d. Total environmental fines amount (**TEF**<sub>t</sub>)
  - e. Provision amounts related to sustainable activities (**Prov**<sub>t</sub>)
  - f. Health, safety, environmental and community expenditure (**HSEC**<sub>t</sub>)
  - g. Communication expenses (**Comm. Exp**<sub>t</sub>)
  - h. Litigation proceeding amount (**LitExp**<sub>t</sub>)
  - i. Female recruitment expenses (**FRE**<sub>t</sub>)
  - j. Female leadership program expenses (**FLP**<sub>t</sub>)
  - k. Research development expenses (**R&D**<sub>t</sub>)
-

- 
- l. Work-life balance policy amount (WLB<sub>t</sub>)
  - m. Costs of employee turnover (CTO<sub>t</sub>)
  - n. Women empowerment program expenses (WEP<sub>t</sub>)

### III. Constraints

#### A. Accounting definitional constraints

1. Payments to government

$$\text{Payments to government}_t = \text{Gross taxes}_t + \text{Other Payments}_t$$

2. After tax profit definition

$$\text{After tax Profit}_t = (1 - \text{tax rate}) (\text{EBIT}_t - \sum_{i=1}^5 i \times \text{Long Term Debt}_t)$$

#### B. Investment constraints

1. Investments in financial assets

$$\text{Investment in financial assets}_t \geq \text{Investment in financial assets}_{t-1}$$

2. Investments in capital assets

$$\text{Investments in capital assets}_t - \rho \text{Investments in capital assets}_{t-1} \geq 0$$

#### C. Company's policy constraints derived from the corporate governance practices from feminist ethics of care perspective

##### C1. Corporations are webs of relations among stakeholders

1. Payments to suppliers and contractors (PSC<sub>t</sub>)

$$\text{Payments to suppliers and contractors}_t - \delta \text{Payment to suppliers and contractors}_{t-1} \geq 0$$

2. Employee wages and benefits amount

$$\text{Employee wages and benefits}_t - \gamma \text{Employee wages and benefits}_{t-1} \geq 0$$

3. Dividends policy

$$\text{Div}_t - \theta \text{Div}_{t-1} \geq 0$$

4. Total environmental fines amounts

$$\frac{\text{Total environmental fines}_t}{\text{Environmental program expenditure}_t} \leq X$$

5. Provision amounts

$$\text{Provision}_t = (1 + \epsilon) \text{Provision}_{t-1}$$


---

---

## C2. Corporations should thrive on chaos and environmental change (Social and environmental risk management)

6. The interest coverage

$$\frac{\text{EBIT}_t}{(\sum_{t=1}^5 i \times \text{Existing LTD} + \sum_{t=1}^5 i' \times \Delta \text{LTD})} \geq Y$$

7. Current ratio

$$\frac{\text{CA}_t}{\text{CL}_t} \geq \text{Average} \sum_{t=1}^T \frac{\text{CA}}{\text{CL}}$$

8. Environmental research expenditure

$$\text{ERE}_t \geq \text{ERE}_{t-1}$$

9. Environmental costs

$$\text{Environmental costs}_t - \phi \text{Environmental costs}_{t-1} = 0$$

10. The biodiversity and land management expenditures

$$\text{BLE}_t \geq \text{BLE}_{t-1}$$

11. HSEC risk management program expenditures

$$\text{HSEC risk program}_t \geq \text{HSEC risk program}_{t-1}$$

## C3. Replace conflict and competition with communication and collective action

12. The communication expenses

$$\text{Communication expenses}_t \geq \left( \text{Average} \sum_{t=1}^T \frac{\text{Communication expenses}}{\text{Total expenses}} \right) \times \text{Total expenses}_{t-1}$$

13. The litigation proceedings amounts

$$\text{Litigation expenses}_t \leq \text{Lowest litigation expenses}_{t=1}^T$$

## C4. Principle of moral responsibility is reflected in the voices of women

14. The female recruitment expenditure

$$\text{Female recruitment expenses}_t \geq \left( \text{Average} \sum_{t=1}^T \frac{\text{Female recruitment expenses}}{\text{Total expenses}} \right) \times \text{Total expenses}_{t-1}$$

15. Expenditures for the leadership and mentoring program for future women leader

$$\text{Female leadership program expenses}_t \geq \text{Female leadership program expenses}_{t-1}$$

---

**C5. The voluntary or discretionary nature of the CSR activities**

16. Research and development expenses

$$\mathbf{R\&D\ expenses}_t = \epsilon \mathbf{Total\ expenses}_{t-1}$$

17. Community contribution and environmental program expenditure

$$\mathbf{Community\ contribution}_t \geq \mathbf{Z\%Pre - tax\ profit}_t$$

$$\mathbf{Environmental\ program\ expenditure}_t \geq \mathbf{Z\% Pre - tax\ profit}_t$$

**C6. Women's interests in the employee group and other stakeholder groups are acknowledged**

18. Equal pay for women employee

$$\mathbf{Female\ employees\ wages\ rate}_t - \mathbf{Male\ employees\ wages\ rate}_t = 0$$

19. Work-life balance policy

$$\mathbf{Work - life\ balance\ policy\ expenses}_t \geq \mathbf{Work - life\ balance\ policy\ expenses}_{t-1}$$

20. Cost savings from decrease in employee turnover

$$\mathbf{Costs\ of\ employee\ turnover}_t \leq \mathbf{Costs\ of\ employee\ turnover}_{t-1}$$

21. Women empowerment program expenses in community group

$$\mathbf{Women\ empowerment\ program}_t \geq \frac{\mathbf{Women\ empowerment\ program}}{\mathbf{Community\ contributions}_t}$$

---

The derivation of the concepts and principles of the corporate governance from the ethics of care perspective to the optimisation model is presented in Table 6.2. This serves as a validation tool of the model, to determine whether the model represents the underpinning theory. The derivation also takes into account the limitations of financial accounting identified by Deegan (2010).

**Table 6.2 The derivation from the ethics of care principles and accounting limitations to the Optimisation Model**

Corporate governance principles under the ethics of care	The limitations of financial accounting identified by Deegan (2010)	The proposed optimisation model
a. Achieved through perception of one's self as connected to others.		<b>Objective Function:</b> <b>Maximise</b> $\sum_{t=1}^T$ <b>economic value retained<sub>t</sub></b>
		<b>Constraints:</b>
		<b>Accounting definitional constraints</b> 1. Payments to government 2. After-tax profit definition
1. Corporations are webs of relationships among stakeholders	1. Tends to focus on the information needs of stakeholders with a financial interest 2. Applies the concept of 'materiality' 3. Adopts the practice of discounting liabilities 4. Applies the 'entity assumption' 5. Excludes from expenses the impacts on resources not controlled by the entity 6. Applies the recognition criteria of 'measurability' and probability.	1. Payments to suppliers and contractors 2. Employee wages and benefits amount 3. Dividends policy 4. Total environmental fines amounts 5. Provision amounts 6. Investment in financial and capital assets
2. Corporations should thrive on chaos and environmental change		1. The interest coverage 2. Current ratio 3. Environmental research expenditure 4. Environmental costs 5. Biodiversity and land management expenditure 6. HSEC risk management program

Corporate governance principles under the ethics of care	The limitations of financial accounting identified by Deegan (2010)	The proposed optimisation model
		expenditure
3. Replace conflict and competition with communication and collective action		1. Communication expenses 2. Litigation proceedings amounts
4. Strategy as solidarity		
5. Replace hierarchy with radical decentralisation and empowerment		
b. Moral dilemmas are contextual		
c. Dilemmas solved through inductive thinking.		
d. Development through stages is sequential and hierarchical.		
e. Principle of moral responsibility is reflected in the voices of women.		1. Female recruitment expenditure 2. Expenditures for the leadership and mentoring program for future women leaders
f. Distinguished by an emphasis on attachments, issues of self-sacrifice and selflessness, and consideration of relationships as primary.		
g. The nature of the CSR activities should not only be mandatory or compulsory but also more importantly, <b>voluntary or discretionary</b> .		1. Research and development expenses 2. Community contribution and environmental expenditure.
3. Women's interests in the employee group and other stakeholder groups are acknowledged.		1. Equal pay for women employee 2. Work-life balance policy 3. Cost savings from decrease in employee turnover 4. Women's empowerment program expenses in community group

As illustrated in Table 6.2, there are several principles that have not translated and are not included in the optimisation model. In contrast, the accounting definitional

constraints have no principles associated with them as these constraints represent the relationships between accounts in the financial statements and are not specifically related to the ethics of care. The fact that some principles are not included in the optimisation model implies that they cannot be translated into financial amounts and are better investigated using the qualitative analysis, as discussed in Chapter 5. This is in line with recommendations made by Wicks, Gilbert and Freeman (1994), as the feminist reading of the stakeholder concept, that strategy does not have to be objective or decision making dictated by numbers; it is better to be complemented by experiences, perceptions and interpretations of the languages used.

The data and results from the qualitative approach were also used to inform the quantitative model. For instance, the qualitative data for the “Corporations should thrive on chaos and environmental change” principle has provided information on the various business risks, including social and environmental risks, identified by BHP Billiton. The risks were then translated into the financial expenditure needed to mitigate the risks in the financial planning model.

#### 6.4 Data Inputs

BHP Billiton’s data for the 6-year-period (2006-2011) was gathered to project the financial condition in 2012-2016. Several key data inputs are presented in Tables 6.3 and 6.4.

**Table 6.3 Key data inputs of BHP Billiton (consolidated), for the year 2006-2011  
(in US\$ million, otherwise stated)**

<b>Key Data Inputs</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Revenues (net sales revenue plus other income)	39,886	47,962	59,991	50,762	53,212	72,229
Sales revenue	32,153	39,498	59,473	50,211	52,798	71,739
Operating expenses (expenses excluding finance costs)	24,612	28,370	35,976	38,640	33,295	40,454
Payments to suppliers, contractors, etc)	17,988	19,936	26,358	23,877	22,306	26,997
Employee wages and	2,982	3,311	4,360	4,345	4,830	5,457

<b>Key Data Inputs</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
benefits (expenditure on wages and benefits of the employee workforce and not future commitments)						
Payments to providers of capital: shareholder dividends	1,936	2,271	3,135	4,563	4,618	5,054
Payments to providers of capital: interest payments made to providers of loans	626	601	722	589	496	497
Payments to government (gross taxes and royalties)	5,341	6,061	8,121	7,940	6,892	9,943
Community investments (voluntary contributions of funds in the broader community)	81.3	103	141	198	200	195.5
Environmental program expenditure (including environmental program in certain sites, site rehabilitation, environmental monitoring, and other environment expenditure such as environmental impact assessment and training)	309	288	The Company's focus on integrating environmental responsibility into activities means that it is not possible to accurately extract expenditure spent on the environment and, for that reason, it is no longer reported in the Annual Report and Sustainability Report			
EBIT (earnings before interest and taxes)	14,671	18,401	24,145	12,160	20,031	31,980
Long-term debt (non-current interest bearing liabilities)	7,648	9,291	9,234	15,325	13,573	12,388
After tax profit	10,534	13,496	15,962	6,338	13,009	23,946
Preferred dividends (\$ per share)	0	0	0	0	0	0
Property, plant and equipment (net book value)	30,985	36,705	47,332	49,032	55,576	68,468
Earnings before tax	15,116	19,212	22,483	11,617	19,572	31,255
Deferred tax expense	(612)	(719)	418	(799)	1,168	(1,536)
Assets	48,516	58,168	75,889	78,770	88,852	102,891
Current assets	8,776	13,756	21,561	22,486	25,134	25,280
Current liabilities	8,861	11,307	16,359	11,850	13,042	19,733
Financial assets (shares and other available for sale investments)		486	535	449	762	742
Sustainable activities in current and non-current provision account (comprised of the closure, rehabilitation, and restoration costs)	4,112	5,101	5,360	6,156	6,642	7,993
Research and development	76	169	244	156	65	74

Key Data Inputs	2006	2007	2008	2009	2010	2011
expenses						
Total fines for breaching environmental regulation	0.48	0.04	0.12	0	0.04	0.002

**Table 6.4 Selected ratios**

	2006	2007	2008	2009	2010	2011	Rate applied in computation
Revenues growth (%)		20.25	25.08	-15.38	4.83	35.74	14.10 (average)
Sales revenue growth (%)		23.15	50.57	-15.57	5.15	35.87	12.15 (average for four years excluding the highest amount in year 2008)
Ratio of property, plant and equipment/sales revenue	0.64	0.63	0.63	0.62	0.63	0.67	0.64 (average)
Ratio of operating expenses/revenue	0.62	0.59	0.60	0.76	0.63	0.56	0.63 (average)
Growth of payments to suppliers and contractors		0.11	0.32	-0.09	-0.06	0.21	0.098 (average)
Ratio of employee wages and benefits/revenues	0.07	0.07	0.07	0.09	0.09	0.08	0.078 (average)
EBIT/long-term debt ratio	1.92	1.98	2.61	0.79	1.48	2.58	
EBIT/sales ratio	0.46	0.47	0.41	0.24	0.38	0.45	0.4 (average)
Interest coverage ratio	28x	33x	33x	21x	41x	65x	21x (minimum)
Current ratio	0.99	1.08	1.32	1.90	1.93	1.28	1.42 (average)
Ratio of current assets/total assets	0.18	0.24	0.28	0.29	0.28	0.25	0.25 (average)
Dividend growth (%)		17.30	38.04	45.55	1.21	9.44	22.31 (average)
Growth in sustainable activities in provision amount (%)		24.05	5.08	14.85	7.89	20.34	14.44 (average)
Ratio of R&D/operating expenses	0.003 4	0.006 4	0.006 8	0.004	0.002	0.001 8	0.0041 (average)
Ratio of interest on loans/long-term debt	0.08	0.07	0.08	0.04	0.04	0.04	0.06 (average)
Ratio of assets/sales	1.51	1.47	1.28	1.57	1.68	1.43	1.49 (average)
Ratio of financial assets/assets		0.008	0.007	0.006	0.009	0.007	0.07 (average)
Ratio of total environmental fines/environmental program expenditure	0.002	0.000 1	Environmental expenditure data is not available as the Company's focus on integrating environmental responsibility into activities means that it is not possible to accurately extract expenditure spent on the environment and, for that reason, it is no longer reported in the Annual Report and Sustainability Report				0.0001 (minimum)

## 6.5 Using the data inputs in the Linear Programming (Optimisation) Model

### 6.5.1 The Objective function development

The objective function in the proposed model is:

$$= \text{Maximise } \sum_{t=1}^5 (\text{Revenues and other income}_t - \text{Payments to suppliers, contractors, etc}_t - \text{Wages and benefits to employees}_t - \text{Shareholder dividends}_t - \text{Interest payments}_t - \text{Gross taxes and royalties}_t - \text{Voluntary contributions of funds in the broader community}_t - \text{Total environmental expenditure}_t)$$

Using the revenue growth data and revenues for the period of 2006-2011 (six years), the revenue projections for the next five years (2012-2016) are provided in Table 6.5. The average revenue growth of 14.10% (see Table 6.4) in 2006-2011 was used to calculate the revenue projections for 2012-2016.

**Table 6.5 Revenues (net sales revenue plus other income) projection (in US\$ million)**

	2012	2013	2014	2015	2016	Total
Revenues (net sales revenue plus other income)	82,413	94,034	107,292	122,421	139,682	545,842

Since the other variables are the decision variables which will become the output of the model, only revenue projections are included in the objective function. Given that the estimation of total revenues for 2012-2016 is US\$545,842 Million, the objective function is:

$$= \text{Maximise } 545,842 - \sum_{t=1}^5 (\text{Payments to suppliers, contractors, etc}_t - \text{Wages and benefits to employees}_t - \text{Shareholder dividends}_t - \text{Interest payments}_t - \text{Gross taxes and royalties}_t - \text{Voluntary contributions of funds in the broader community}_t - \text{Total environmental expenditure}_t)$$

$$= \text{Maximise } 545,842 - \sum_{t=1}^5 (\text{Payments to suppliers, contractors, etc}_t - \text{Wages and benefits to employees}_t - \text{Shareholder dividends}_t - (\text{Interest rate} \times \text{LTD}_t) - \text{Gross taxes and royalties}_t - \text{Voluntary contributions of funds in the broader community}_t - \text{Total environmental expenditure}_t)$$

It is assumed that the interest rate is predicted using the average of the ratio of interest on loans/long-term debt from 2006-2011, which is 0.06 (6%, see Table 6.4). The objective function becomes as follows:

$$= \text{Maximise } 545,842 - \sum_{t=1}^5 (\text{Payments to suppliers, contractors, etc}_t - \text{Wages and benefits to employees}_t - \text{Shareholder dividends}_t - (6\% \times \text{LTD}_t) - \text{Gross taxes and royalties}_t - \text{Voluntary contributions of funds in the broader community}_t - \text{Total environmental expenditure}_t)$$

### 6.5.2 Data input for accounting definitional constraints

#### 1. Payments to government (PG<sub>t</sub>)

$$\text{Payments to government}_t = \text{tax rate} \% (\text{EBIT}_t - i_t \text{LTD}_t) + \text{Other Payments}_t$$

where:

*i* is the interest rate applicable to the existing long-term debt,

EBIT is the earnings before interest and taxes,

LTD is the long-term debt.

For simplicity, the tax rate used is the standard rate for corporations (30%) and the interest rate was assumed to be at 6%. The prediction of sales revenue and EBIT in the future five years (2012-2016) was performed using the average sales growth (12.15, see Table 6.4) and average ratio of EBIT/sales in 2006-2011 (0.4, see Table 6.4). Sales revenue was used here instead of the revenues (net sales revenue plus other income) as the former represents the operational activities of a company which tends to be more stable without the other income.

**Table 6.6 EBIT projection (in US\$ million)**

	2012	2013	2014	2015	2016
Sales revenue (at 12.15% growth)	80,455	90,230	101,193	113,488	127,277
EBIT (0.4 x sales revenue)	32,182	36,092	40,477	45,395	50,911

For computation purposes, it was assumed that there were no other payments so that the payments to government constraint for 2012-2016 is as follows:

**Payments to government<sub>2012</sub> = 30% (32,182 – 6% LTD<sub>2012</sub>)**  
**Payments to government<sub>2013</sub> = 30% (36,092 – 6% LTD<sub>2013</sub>)**  
**Payments to government<sub>2014</sub> = 30% (40,477 – 6% LTD<sub>2014</sub>)**  
**Payments to government<sub>2015</sub> = 30% (45,395 – 6% LTD<sub>2015</sub>)**  
**Payments to government<sub>2016</sub> = 30% (50,911 – 6% LTD<sub>2016</sub>)**

1. After-tax profit definition

$$\text{After – tax Profit}_t = (1 - \text{tax rate}) (\text{EBIT}_t - \sum_{i=1}^5 i \times \text{Long Term Debt}_t)$$

Using the standard tax rate of 30%, the equation for the after tax profit becomes:

**After – tax profit<sub>2012</sub> = 70% (32,182 – 6% LTD<sub>2012</sub>)**  
**After – tax profit<sub>2013</sub> = 70% (36,092 – 6% LTD<sub>2013</sub>)**  
**After – tax profit<sub>2014</sub> = 70% (40,477 – 6%LTD<sub>2014</sub>)**  
**After – tax profit<sub>2015</sub> = 70% (45,395 – 6%LTD<sub>2015</sub>)**  
**After – tax profit<sub>2016</sub> = 70% (50,911 – 6%LTD<sub>2016</sub>)**

### 6.5.3 Data input for investment constraints

1. Investments in financial assets

$$\text{Investments in financial assets}_t \geq \text{Investments in financial assets}_{t-1}$$

Investments in financial assets constraints are formed after predicting the amount of assets using the average ratio of assets/sales of 1.49 and ratio of financial assets/assets of 0.07 (see Table 6.4).

**Table 6.7 Assets projection (in US\$ million)**

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Sales revenue	80,455	90,230	101,193	113,488	127,277
Assets (1.49 x sales revenue)	119,878	134,443	150,778	169,097	189,643

The constraint can be further formed as:

**Investments in financial assets<sub>2012</sub> ≥ 0.007 x Assets<sub>2012</sub>**  
**Investments in financial assets<sub>2013</sub> ≥ 0.007 x Assets<sub>2013</sub>**  
**Investments in financial assets<sub>2014</sub> ≥ 0.007 x Assets<sub>2014</sub>**  
**Investments in financial assets<sub>2015</sub> ≥ 0.007 x Assets<sub>2015</sub>**  
**Investments in financial assets<sub>2016</sub> ≥ 0.007 x Assets<sub>2016</sub>**

In line with the ethics of care principle, the investments in financial assets are allocated in companies with sound social and environmental track records; companies that pay attention to certain issues such as human rights, labour standards, equal opportunities, environmental protection, consumer safety, community concerns and stakeholder relations. The allocation process and the selection of the investee are decided by managers and are not discussed here as they are beyond the scope of this thesis.

## 2. Investments in capital assets

$$\text{Investments in capital assets}_t - \rho \text{Investments in capital assets}_{t-1} \geq 0$$

where  $\rho$  is  $1 + \text{SROI}$  projected from previous period.

To determine the SROI, several excerpts from the 2011 Annual Report, which reflect the benefits of investments in capital assets (property, plant and equipment), were randomly selected. Whenever possible, the benefits were quantified to estimate the social benefits from the investments. These excerpts are presented in Table 6.8.

**Table 6.8 Selected excerpts to determine the SROI**

	<b>Excerpts from 2011 Annual Report</b>	<b>Quantification to determine the SROI</b>
1	<p><b><i>Macedon</i></b>  Macedon is a domestic gas development in Western Australia.  The project will consist of a 200 MMcf/d of stand-alone gas plant, four subsea production wells, a 90 kilometre, 20 inch wet gas pipeline and a 67 kilometre, two inch sales gas pipeline. In August 2010, the project was approved at an investment level of US\$1,050 million (net BHP Billiton share). Execution phase work, including award of principal Engineering Procurement and Construction Management (EPCM) onshore and offshore installation contracts, has commenced.  We are the operator, with a 71.43 per cent interest and Apache PVG Pty Ltd holds the remaining 28.57 per cent interest. First gas is expected in CY2013. (p. 21)</p>	<p>The benefits to social and environment are not mentioned in the excerpt.</p> <p>Assume that the social benefits of this project include but are not limited to the following items.</p> <p>1. A better and safe work place which will reduce casualties (injury) costs or the workers' visit to doctor or hospital  The appropriate indicator to be used is the <b>Total recordable injuries frequency (TRIF)</b> which is defined as:  The sum of (fatalities + lost-time cases + restricted work cases + medical treatment cases) x 1,000,000 ÷ actual hours worked.  TRIF is stated in units per million hours worked. In 2011, the TRIF was 5.  Assume that the costs per recordable injury are US\$2 million based on calculated cost per casualty and fatalities for proposed Olympic Dam expansion</p>

	<b>Excerpts from 2011 Annual Report</b>	<b>Quantification to determine the SROI</b>
		<p>(2011, p. 679). Benefits in form of cost savings then become US\$10 million.</p> <p>2. A better gas processing which will control and reduce the greenhouse gas (GHG) emissions. As no sufficient data are available, assumption is used to measure the benefits of GHG emissions reduction. Assume that the benefits amount to 5% of US\$1,050 million investment level (US\$ 52.5 million).</p> <p><b>Total social benefits are US\$10 million + US\$ 52.5 million = US\$ 62.5 million. The investment level is US\$1,050 million.</b></p>
2	<p>We own 33.75 per cent of Antamina, a large, low-cost, long-life copper/zinc mine in Peru.</p> <p>In FY2011, Antamina continued execution of the expansion project. With a total investment of US\$1.3 billion (US\$434.7 million our share), the project will expand milling capacity by 38 per cent to 130,000 tonnes per day (tpd). The expansion project includes a new SAG mill, a new 55 kilometre power transmission line, an expanded truck shop facility and upgrades to the crushing and tailing systems, flotation circuit and port capacity.</p> <p>Commissioning of the project is scheduled to start at the end of CY2011. Our share of the capital expenditures in the project totalled US\$147 million in FY2011. In addition, Antamina announced an increase to its estimated Ore Reserves during the second half of FY2011. (p. 28)</p>	<p>Assume that the social benefits of this project include but are not limited to the following items.</p> <ol style="list-style-type: none"> <li>1. A more environment friendly tailing system which will save the costs of cleaning the water and land resources. Assume that the avoided costs of cleaning should a leak occurs amount to \$40 per ton. The cost savings become US\$5.2 million.</li> <li>2. An improvement in power transmission line, flotation circuit and port capacity. Assume that the benefits amount to 5% of US\$434.7 million investment level (US\$21.74 million).</li> </ol> <p><b>Total social benefits are US\$5.2 million + US\$21.74 million = US\$26.94 million. The investment level is US\$434.7 million.</b></p>
3	<p><b>Western Australia Iron Ore</b></p> <p>Construction of Rapid Growth Project 5 (RGP5) is ongoing. Our share of project expenditure to 30 June 2011 amounted to US\$4.8 billion. This project, which was announced in November 2008, will substantially double track the Newman main rail line, construct two new shipping berths on the Finucane Island side of the Port Hedland harbour and add crushing, screening and stockpiling facilities at</p>	<p>Assume that the social benefits of this project include but are not limited to the following items.</p> <ul style="list-style-type: none"> <li>• The additional crushing, screening and stock piling facilities will improve the dust management which will have a good impact to the health, safety and productivity of the workers and people who live in surrounding areas. Assume that it will save the costs of hospital visit amount to 5% of the construction costs</li> </ul>

	Excerpts from 2011 Annual Report	Quantification to determine the SROI
	<p>Yandi.</p> <p>In March 2011, we announced approval of an additional US\$7.4 billion (BHP Billiton share US\$6.6 billion) of capital expenditure to continue production growth in our WAIO operations. This investment is the final approval of projects initiated in 2010, with pre-commitment funding of US\$2.3 billion (BHP Billiton share US\$2.1 billion). It will deliver an integrated operation with a minimum capacity of 220 mtpa (100 per cent basis), with first production expected from Jimblebar early in CY2014. This additional investment includes:</p> <ul style="list-style-type: none"> <li>• US\$3.4 billion (BHP Billiton share US\$3.3 billion) to develop the Jimblebar mine and rail links, and procure mining equipment and rolling stock to deliver an initial capacity of 35 mtpa, expandable to 55 mtpa;</li> <li>• US\$2.3 billion (BHP Billiton share US\$1.9 billion) to further develop Port Hedland, including two additional berths and ship loaders, a car dumper, connecting conveyor routes and associated rail works and rolling stock;</li> <li>• US\$1.7 billion (BHP Billiton share US\$1.4 billion) for port blending facilities and rail yards to enable ore blending, expand resource life and prepare for the future growth of the business beyond the inner harbour. (p. 34)</li> </ul>	<p>(US\$4.8 billion). The cost savings are US\$240 million.</p> <ul style="list-style-type: none"> <li>• The investment of port blending facilities can expand resource life and contribute to the future growth of the iron ore business beyond the inner harbour. This investment will need many workers and, hence, create job opportunities for local people. Assume that the job opportunities will bring welfare for the workers in an amount equals to 1% of the Total investment ((US\$ 4.8 billion + US\$6.6 billion = US\$11.4 billion). The estimated welfare created is US\$114 million.</li> </ul> <p><b>Total social benefits are US\$240 million + US\$114 million = US\$354 million.</b>  <b>Total investment level is US\$11.4 billion.</b></p>
4	<p><b>Metalloys</b></p> <p>The High Carbon Ferro Manganese (HCFeMn) furnace M14 at the Metalloys West Plant was approved for execution in November 2010 with a total approved investment of US\$91 million (US\$54.6 million BHP Billiton share). This furnace would add an additional 130 kilotonnes per annum (ktpa) capacity (100 per cent or about 78 ktpa BHP Billiton share) of HCFeMn and replace smaller, less efficient furnaces from the South Plant with a current capacity of 55 ktpa. The M14 furnace will contribute to power efficiency at Metalloys site as it will add to the site's own generation capacity</p>	<p>Assume that the social benefits of this project include but not limited to the following items.</p> <ul style="list-style-type: none"> <li>• A rise in the energy sufficiency across the production facility which results in a reduction in CO2 footprint. According to a report by The Climate Institute (The Climate Institute 2009) BHP Billiton estimated an emission reduction by around 741,000 tonnes a year. Assuming the carbon prices identified in Treasury's modelling of \$23 per tonne, the potential savings that can be used for social benefits (such as for the community investment, local worker recruitment, etc) are US\$17 million for</li> </ul>

	<b>Excerpts from 2011 Annual Report</b>	<b>Quantification to determine the SROI</b>
	utilising the furnace off-gases. (p. 36)	total investment level of US\$54.6 million.  <b>Total social benefits are US\$17 million. Total investment level is US\$54.6 million.</b>
5	<b>Bowen Basin Expansions</b> In March 2011, approval was given for three key metallurgical coal projects located in the Bowen Basin in Central Queensland, Australia. The projects are expected to add 4.9 Mt of annual mine capacity (100 per cent basis) through development of the Daunia operation and a new mining area at Broadmeadow. In addition, 11 Mt of annual port capacity (100 per cent basis) will be developed at the Hay Point Coal terminal. The total investment is expected to be US\$5 billion, of which BHP Billiton's share is US\$2.5 billion.(p. 38)	Assume that the social benefits of the expansion include but not limited to: <ul style="list-style-type: none"> <li>• employment opportunities especially for the people in the surrounding areas;</li> <li>• population growth and diversification in communities;</li> <li>• increased financial supports and education in the towns;</li> <li>• improvements in infrastructure such as roads, communications and access to water pipelines.</li> </ul> Due to the unavailability of public data on the detail of the benefits, an assumption of 10% of shared total investments is used to represent the social benefits. The amount is 10% of US\$42.5 billion which is US\$250 million.  <b>Total social benefits are US\$250 million. Total investment level is US\$2.5 billion.</b>

The total social benefits for excerpts 1-5 were US\$710.44 million for a total initial investment of US\$15.44 billion. Assuming a discount rate of 5% based on the average Australian interest rates (Trading Economics 2013), the present value of the social cash flow for the five-year period (2012-2016) at a discount rate of 5% is US\$3,075,833,406. The SROI is calculated as:

$$\text{SROI} = \frac{\text{Net Present Value of Benefits}}{\text{Initial Investment}}$$

$$\text{SROI} = \frac{3,075,833,406}{15,440,000,000} = 20\%$$

Using this calculated SROI, the constraints for the company's investment in capital assets (property, plant and equipment) are formed as follows. From the 2011 amount of

investments in capital assets of US\$ 68,468 million, it is projected that the amount of investment will be growing at a rate of 20% (the SROI):

$$\begin{aligned} \text{Investments in capital assets}_{2012} - (1 + 20\%) \text{Investments in capital assets}_{2011} &\geq 0 \\ \text{Investments in capital assets}_{2013} - (1 + 20\%) \text{Investments in capital assets}_{2012} &\geq 0 \\ \text{Investments in capital assets}_{2014} - (1 + 20\%) \text{Investments in capital assets}_{2013} &\geq 0 \\ \text{Investments in capital assets}_{2015} - (1 + 20\%) \text{Investments in capital assets}_{2014} &\geq 0 \\ \text{Investments in capital assets}_{2016} - (1 + 20\%) \text{Investments in capital assets}_{2015} &\geq 0 \end{aligned}$$

In BHP Billiton's capital management strategy (2011 Annual Report, p. 217), it is stated that:

#### **Capital management**

The Group's strategy is focused on owning and operating large, long-life, low-cost, expandable, upstream assets and the Group continually reviews its portfolio to identify assets which do not fit this strategy. The Group will invest capital in assets where they fit our strategy. The Group's priorities for cash flow are:

- reinvestment in projects that carry attractive rates of return regardless of the economic climate
- commitment to a solid 'A' credit rating
- returning excess capital to shareholders firstly with its progressive dividends policy and thereafter via dividends and capital management (for example, share buy-backs)

The group's capital management strategy does not explicitly mention the social benefits to the community and environment from certain investments. However, in the Sustainability Section the Company does state that:

We have actively engaged with the Australian Government as it develops its climate change policy response. In addition to recommending a policy approach that is consistent with our principles, we propose that an effective strategy for minimising Australia's exposure to a future global carbon price includes avoiding the construction of new long-life, carbon emissions intensive assets where affordable low-carbon alternatives are available, especially in the power and building sectors. (p. 47)

In Table 6.8, it can be seen that several investments do not mention the social benefits and, hence, the estimation of SROI cannot be done using the capital investments data stated in the Annual Report.

The fact that the estimation cannot be accurately performed using the publicly available data has to be recognised as one of the research limitations of this thesis. In future may

be possible to use the reasonable estimation, provided that the researcher has access to the accounting system of the sample and/or conducts a survey using interviews or questionnaires targeted to the responsible person in certain companies. While measuring costs and benefits can be subjective and certain benefits and costs might not be recorded in the accounting system if they do not qualify to meet the transaction definition according to accounting principles, direct access to the sample company could at least reduce the level of subjectivity.

#### **6.5.4 Data input for the Company's policy constraints derived from the corporate governance practices from the feminist ethics of care perspective**

1. Payments to suppliers and contractors (PSC<sub>t</sub>)

$$\mathbf{PSC}_t - \delta \mathbf{PSC}_{t-1} \geq 0$$

Payments to suppliers and contractors for goods and services acquisition are expected to increase at least at a growth rate projected by  $\delta$  which is defined as 1 + the average growth of 0.098 (see Table 6.4).

Since the amount of payments to suppliers and contractors is one of the decision variables, it cannot be projected directly using the average growth. A series of constraint was created as follows to solve the problem using the optimisation method:

$$\mathbf{PSC}_{2012} - 1.098 \mathbf{PSC}_{2011} \geq 0$$

$$\mathbf{PSC}_{2012} \geq 1.098 \times \mathbf{US\$26,997 \text{ million}}$$

$$\mathbf{PSC}_{2012} \geq 29,643 \text{ (US\$ million)}$$

$$\mathbf{PSC}_{2013} - 1.098 \mathbf{PSC}_{2012} \geq 0$$

$$\mathbf{PSC}_{2014} - 1.098 \mathbf{PSC}_{2013} \geq 0$$

$$\mathbf{PSC}_{2015} - 1.098 \mathbf{PSC}_{2014} \geq 0$$

$$\mathbf{PSC}_{2016} - 1.098 \mathbf{PSC}_{2015} \geq 0$$

2. Employee wages and benefits amount (EWB<sub>t</sub>)

$$\mathbf{Employee \ wages \ and \ benefits}_t - \gamma \mathbf{Employee \ wages \ and \ benefits}_{t-1} \geq 0$$

It is projected that employee wages and benefits will increase in  $\gamma$  compared to the previous year.  $\gamma$  is defined as  $1 +$  the average ratio of employee wages and benefits/revenue in the previous periods (in Table 6.4, the average ratio is 0.078).

A series of constraints was created as follows to solve the problem using the optimisation method:

$$\text{Employee wages and benefits}_{2012} - 1.084 \text{ Employee wages and benefits}_{2011} \geq 0$$

$$\text{EWB}_{2012} \geq 1.078 \times \text{US\$5,457 million}$$

$$\text{EWB}_{2012} \geq 5,915 \text{ (US\$ million)}$$

$$\text{EWB}_{2013} - 1.078 \text{ EWB}_{2012} \geq 0$$

$$\text{EWB}_{2014} - 1.078 \text{ EWB}_{2013} \geq 0$$

$$\text{EWB}_{2015} - 1.078 \text{ EWB}_{2014} \geq 0$$

$$\text{EWB}_{2016} - 1.078 \text{ EWB}_{2015} \geq 0$$

### 3. Dividends policy ( $\text{Div}_t$ )

Dividends are expected to grow at a constant annual rate that should be at least stable at a certain minimum dividend growth rate.

$$\text{Div}_t - \theta \text{ Div}_{t-1} \geq 0$$

Where  $\theta$  is  $1 +$  the dividend growth rate (Table 6.4: 22.31%) in the last periods.

Total dividends paid in 2011 were US\$ 5,054 million, which is included in a series of constraints below:

$$\text{Div}_{2012} - 1.223 \text{ Div}_{2011} \geq 0$$

$$\text{Div}_{2012} - 1.223 \times \text{US\$5,054 million} \geq 0$$

$$\text{Div}_{2012} \geq 6,181 \text{ (US\$ million)}$$

$$\text{Div}_{2013} - 1.223 \text{ Div}_{2012} \geq 0$$

$$\text{Div}_{2014} - 1.223 \text{ Div}_{2013} \geq 0$$

$$\text{Div}_{2015} - 1.223 \text{ Div}_{2014} \geq 0$$

$$\text{Div}_{2016} - 1.223 \text{ Div}_{2015} \geq 0$$

4. Total environmental fines amounts

The ratio of total fines for breaching environmental regulations to the amount of environmental program expenditure in 2012 should be less than the minimum ratio in the previous years (represented here as X, which is 0.0001 in Table 6.4).

$$\frac{\text{Total environmental fines}_t}{\text{Environmental program expenditure}_t} \leq X$$

$$\frac{\text{Total environmental fines}_{2012-2016}}{\text{Environmental program expenditure}_{2012-2016}} \leq 0.0001$$

$$\begin{aligned} \text{Total environmental fines}_{2012} &\leq 0.0001 \times \text{Environmental program expenditure}_{2012} \\ \text{Total environmental fines}_{2013} &\leq 0.0001 \times \text{Environmental program expenditure}_{2013} \\ \text{Total environmental fines}_{2014} &\leq 0.0001 \times \text{Environmental program expenditure}_{2014} \\ \text{Total environmental fines}_{2015} &\leq 0.0001 \times \text{Environmental program expenditure}_{2015} \\ \text{Total environmental fines}_{2016} &\leq 0.0001 \times \text{Environmental program expenditure}_{2016} \end{aligned}$$

5. Provision amounts

Provision amounts related to sustainable activities in the balance sheet (such as closure, rehabilitation and restoration costs) should be growing at the average of provision growth in the previous years (represented by ε).

$$\text{Provision}_t - \varepsilon \text{Provision}_{t-1} \geq 0$$

where ε is 1 + the average of provision growth rate in the previous periods (which is 14.44% in Table 6.4).

The constraints are as follows:

$$\begin{aligned} \text{Provision}_{2012} - 1 + 14.44\% \text{Provision}_{2011} &\geq 0 \\ \text{Provision}_{2013} - 1 + 14.44\% \text{Provision}_{2012} &\geq 0 \\ \text{Provision}_{2014} - 1 + 14.44\% \text{Provision}_{2013} &\geq 0 \\ \text{Provision}_{2015} - 1 + 14.44\% \text{Provision}_{2014} &\geq 0 \\ \text{Provision}_{2016} - 1 + 14.44\% \text{Provision}_{2015} &\geq 0 \end{aligned}$$

6. The interest coverage

The interest coverage should be at least equal to the minimum interest coverage multiplier in the last periods (represented by Y, which is 21x in Table 6.4).

$$\frac{\text{EBIT}_t}{i \times \text{LTD}_t} \geq Y$$

Based on data from the EBIT projection in Table 6.6 and an interest rate of 6%, the series of constraints below were created:

$$\frac{\text{EBIT}_{2012-2016}}{6\% \times \text{LTD}_{2012,2013,2014,2015,2016}} \geq 21$$

$$32,182 \geq 21 (6\% \text{LTD}_{2012})$$

$$32,182 \geq 1.26 \text{LTD}_{2012}$$

$$36,092 \geq 1.26 \text{LTD}_{2013}$$

$$40,477 \geq 1.26 \text{LTD}_{2014}$$

$$45,395 \geq 1.26 \text{LTD}_{2015}$$

$$50,911 \geq 1.26 \text{LTD}_{2016}$$

## 7. Current ratio

The current ratio is maintained at a minimum of the average ratio in the last periods, which was 1.42 in Table 6.4.

$$\frac{\text{CA}_t}{\text{CL}_t} \geq \text{Average} \sum_{t=1}^T \frac{\text{CA}}{\text{CL}}$$

Using the current ratio of 1.42 and the ratio of current assets/total assets, which is 0.25, the amounts of current assets and current liabilities are calculated as follows.

**Table 6.9 Current assets and current liabilities projection (in US\$ million)**

	2012	2013	2014	2015	2016
Total assets (1.49 x sales revenue)	119,878	134,443	150,778	169,097	189,643
Current assets (0.25 x total assets)	29,970	33,611	37,695	42,274	47,411
Current liabilities (current assets/1.42)	21,106	23,670	26,546	29,770	33,388

## 8. Environmental research expenditure (ERE<sub>t</sub>)

Expenditure related to participation in research and policy development on reducing climate change impacts, reducing energy and greenhouse gas emissions, water reporting and accounting, product and by-product impacts on nature and other efforts in collaboration with government or other institutions, should be at least the same as in the previous year.

$$\text{ERE}_t \geq \text{ERE}_{t-1}$$

BHP Billiton does not provide details of such expenditure in its financial statements. However, several statements are disclosed in the Sustainability and Annual Reports which can be used as an indication of how much the company spent to participate in environmental research and policy development. These statements are:

*We will spend US\$300 million over the period 2008 to 2012 to:*

- *support industry research, development and demonstration of low emissions technologies, including collaborative research dedicated to accelerating the commercial uptake of promising technologies;*
- *provide capital funding for internal energy projects with a GHG emissions reduction component that might not otherwise be competitive within our normal capital allocation processes;*
- *support the efforts of our employees and our local communities to reduce their emissions. (2011 Sustainability Report, p.43)*

*We recognise that the need to control carbon dioxide emissions has substantial implications for the use of thermal coal as an energy source. We have committed to invest US\$300 million over five years from June 2007 to support the research, development and demonstration of low-emissions technologies, including 'clean coal' and carbon sequestration technologies. (2010 Annual Report, p. 49)*

From those statements, it is apparent that BHP Billiton spent US\$300 million to support research on low-emissions technologies. For simplicity, just assume that BHP Billiton spent the other US\$200 million for research on other matters, such as water reporting and accounting and product and by-product impact on nature. Such simplified assumptions would definitely be used if the company's accounting system could be accessed and the figure could be efficiently extracted from the accounting system. Total expenditure of at least US\$500 million is expected to occur in the year of 2012-2016, calculated as follows:

$$\mathbf{ERE}_{2012, 2013, 2014, 2015, 2016} \geq \mathbf{ERE}_{2011}$$

$$\mathbf{ERE}_{2012} \geq \mathbf{500}$$

$$\mathbf{ERE}_{2013} - \mathbf{ERE}_{2012} \geq \mathbf{0}$$

$$\mathbf{ERE}_{2014} - \mathbf{ERE}_{2013} \geq \mathbf{0}$$

$$\mathbf{ERE}_{2015} - \mathbf{ERE}_{2014} \geq \mathbf{0}$$

$$\mathbf{ERE}_{2016} - \mathbf{ERE}_{2015} \geq \mathbf{0}$$

9. Environmental costs (EC<sub>t</sub>)

The costs of energy, greenhouse gas emissions, water use and other climate change factors are expected to decrease at the average rate of changes in the previous periods. The decrease is symbolised as  $\phi$  which is defined as  $1 - \text{average rate of change}$ .

$$\text{Environmental costs}_t - \phi \text{Environmental costs}_{t-1} = 0$$

To estimate the environmental costs, several indicators were collected from the Annual and Sustainability Reports. These are presented in Table 6.10.

**Table 6.10 Estimation of BHP Billiton's environmental costs**

	2006	2007	2008	2009	2010	2011
Energy use (petajoules)	302	296	306	309	284	286
Costs of energy use per petajoules (US\$) <sup>1</sup>	17	20	23	18	15	15
<b>Total costs of energy use (US\$ million)</b>	<b>0.005</b>	<b>0.006</b>	<b>0.007</b>	<b>0.006</b>	<b>0.004</b>	<b>0.004</b>
Greenhouse gas emission (kilotonnes CO <sub>2-e</sub> )	52,000	50,000	51,000	49,000	47,000	40,800
Costs of greenhouse gas emission per kilotonnes CO <sub>2-e</sub> (US\$) <sup>2</sup>	10,000	10,000	10,000	10,000	10,000	10,000
<b>Total costs of greenhouse gas emission (US\$ million)</b>	<b>520</b>	<b>500</b>	<b>510</b>	<b>490</b>	<b>470</b>	<b>408</b>
Water use (Megalitres-ML)	161,670	161,000	163,000	162,000	147,000	147,000
Costs of water use per Megalitres-ML (US\$) <sup>3</sup>	1,500	1,500	1,500	1,500	1,500	1,500
<b>Total costs of water use (US\$ million)</b>	<b>243</b>	<b>242</b>	<b>245</b>	<b>243</b>	<b>221</b>	<b>221</b>
<b>Total Costs (US\$ million)</b>	<b>763</b>	<b>742</b>	<b>755</b>	<b>733</b>	<b>691</b>	<b>629</b>
<b>Changes (increase/decrease)</b>		<b>-0.027</b>	<b>0.018</b>	<b>-0.029</b>	<b>0.057</b>	<b>-0.089</b>

Source:

<sup>1</sup> (Wood and Carter 2013).

<sup>2</sup>(The Climate Institute 2009).

<sup>3</sup> (Collins 2009).

Note: various external sources were used as the information was not provided in BHP Billiton's reports.

The average change of energy costs is 0.014. It is predicted that the amount of the environmental cost will decrease at this rate. The constraints are as follows:

$$\begin{aligned} \text{Environmental costs}_t - \phi \text{Environmental costs}_{t-1} &= 0 \\ \text{EC}_{2012} - (1 - 0.014) \text{Environmental costs}_{2011} &= 0 \\ \text{EC}_{2012} - 0.986 \times 629 &= 0 \end{aligned}$$

$$\begin{aligned} \text{EC}_{2012} &= 620 \\ \text{EC}_{2013} - 0.986 \text{EC}_{2012} &= 0 \\ \text{EC}_{2014} - 0.986 \text{EC}_{2013} &= 0 \\ \text{EC}_{2015} - 0.986 \text{EC}_{2014} &= 0 \\ \text{EC}_{2016} - 0.986 \text{EC}_{2015} &= 0 \end{aligned}$$

10. Biodiversity and land management expenditure (BLE<sub>t</sub>)

Biodiversity and land management expenditure is expected to be enhanced and, hence, the expenses and costs related to them are expected to be higher than the previous period, or at least the same.

$$\text{BLE}_t \geq \text{BLE}_{t-1}$$

where BLE is the biodiversity and land management expenditures.

In its 2011 Annual Report, BHP Billiton disclosed several activities in biodiversity and land management that follow a holistic approach, as follows:

- a. Assessing and managing the potential impacts of the operations throughout their life cycle, across social, environmental and economic spheres.
- b. Adhering to a formal hierarchy process that begins with avoiding disturbance, followed by mitigating negative impacts, rehabilitating the environment and undertaking compensatory actions.
- c. Conducting effective land management by optimising all land uses within a given region, whether they are for the provision of mining, industrial, agricultural or environmental services.
- d. Obtaining community support when there is strong competition for the use of the land, such as a competition between resource development and agriculture.

- e. Making a number of commitments with regard to protected areas and threatened species.
- f. Having a land management plan that includes base-line and impact assessments, implementation of controls to mitigate impacts on biodiversity and other ecosystem services and monitoring programs to ensure the controls are effective.
- g. Contributing to conservation to deliver significant and lasting benefits to the environment by preserving land of high conservation value in key regions where BHP Billiton operates.

Unfortunately, not many details are provided on these matters in either the Annual or Sustainability Reports, except for a few excerpts, as follows:

Since late 2007, BHP Billiton has implemented an extensive engagement process with conservation Non-Government Organisations (NGOs) aimed at protecting the biodiversity of the region. This led to the formation of a biodiversity strategy to help manage biodiversity in the project area. In 2008, following a series of workshops with leading NGOs, BHP Billiton and Fauna and Flora International (FFI) commenced a joint project ... In February 2010, BHP Billiton signed a \$1.9 million agreement with FFI for an additional program of conservation measures in addition to the \$2.5 million already spent in the area. This project will build on outcomes from previous work and ensure the findings are used in developing a regional conservation strategy. (2010 Sustainability Report, p. 18)

We continue to support biodiversity research, with a US\$3.5 million expenditure in research and development. We had no significant environmental incidents and received four environmental fines totalling US\$37,387 in 2006/07. (2007 Sustainability Report, p. 61)

Our Sustainable Development Policy states that we will 'enhance biodiversity protection by assessing and considering ecological values and land-use aspects in investment, operational and closure activities'. Over the reporting period:

- Eighteen sites reported having biodiversity plans in place...
- Thirty-one sites contributed to biodiversity-related research and development with expenditure totalling US\$2.68 million. (2006 Sustainability Report, p. 335)

The amount spent in 2010 (\$4.4 million comprising the \$1.9 million and \$2.5 million highlighted in the excerpts above) is the previous period expenditure to be included in the constraint as follows:

$$\mathbf{BLE_t \geq BLE_{t-1} \text{ or } BLE_t - BLE_{t-1} \geq 0}$$

$$\mathbf{BLE_{2012} \geq BLE_{2011}}$$

$$\begin{aligned}\mathbf{BLE}_{2012} &\geq 4.4 \\ \mathbf{BLE}_{2013} - \mathbf{BLE}_{2012} &\geq 0 \\ \mathbf{BLE}_{2014} - \mathbf{BLE}_{2013} &\geq 0 \\ \mathbf{BLE}_{2015} - \mathbf{BLE}_{2014} &\geq 0 \\ \mathbf{BLE}_{2016} - \mathbf{BLE}_{2015} &\geq 0\end{aligned}$$

#### 11. HSEC risk management program expenditure

Expenditure on risk management programs for HSEC are predicted to be higher than or at least the same as in the previous year.

$$\mathbf{HSEC\ risk\ program}_t \geq \mathbf{HSEC\ risk\ program}_{t-1}$$

In its 2011 Annual Report, BHP Billiton discloses the following indicators of the HSEC program:

- a. total recordable injury frequency (TRIF);
- b. fatalities/significant environmental incidents;
- c. HSE risk management;
- d. human rights impact assessment; and
- e. environment and occupational health.

It is expected that the number of injuries or incidents will decrease. However, the overall costs for the HSEC program are expected to be higher than or at least the same as in the previous year.

Unfortunately, no data are provided in regards to the amount spent on HSEC activities to support each program indicator. The lack of data could be because the amount is not material and therefore cannot be disclosed. For simplicity, it is assumed that the program consumed 0.1% of operating expenses in the period of 2012 and then subsequently increased 10%. To form the constraints, the operating expenses were projected as the balance remaining after subtracting EBIT from revenues.

**Table 6.11 Operating expenses projection (in US\$ Million)**

	2012	2013	2014	2015	2016
Revenues (net sales revenue plus other income)	82,413	94,034	107,292	122,421	139,682
Less: EBIT	32,182	36,092	40,477	45,395	50,911
<b>Operating expenses</b>	<b>50,231</b>	<b>57,942</b>	<b>66,815</b>	<b>77,026</b>	<b>88,771</b>

The constraints are as follows:

$$\begin{aligned} \text{HSEC risk program}_{2012} &\geq 0.1\% \times \text{Operating expenses}_{2012} \\ \text{HSEC risk program}_{2013} - (1 + 10\%) \text{HSEC risk program}_{2012} &\geq 0 \\ \text{HSEC risk program}_{2014} - (1 + 10\%) \text{HSEC risk program}_{2013} &\geq 0 \\ \text{HSEC risk program}_{2015} - (1 + 10\%) \text{HSEC risk program}_{2014} &\geq 0 \\ \text{HSEC risk program}_{2016} - (1 + 10\%) \text{HSEC risk program}_{2015} &\geq 0 \end{aligned}$$

## 12. Communication expenses

Communication expenses reflect the stakeholder engagement methods. In line with the ethics of care principles, the engagement through communication appears to be extensive. In this model, the communication expenditure allocated to discussing and solving problems with any stakeholders should increase at least to the average of communication expenses to operating expenses ratio in the previous years.

$$\text{Communication expenses}_t \geq \left( \text{Average } \sum_{t=1}^T \frac{\text{Communication expenses}}{\text{Operating expenses}} \right) \times \text{Operating expenses}_{t-1}$$

The communication process can take many forms, from meetings, printed and telephone communication or via e-mail. While the transaction might seem to be meticulously reported, it can be made possible through the design of accounting systems to support such reporting. Since no data are available in regards to the detail of stakeholder communication expenses in the company's Annual and Sustainability Reports, an assumption is made for the average ratio of communication expenses to operating expenses in the previous years to be 0.005. The constraints of communication expenses are as follows:

$$\begin{aligned} \text{Communication expenses}_{2012} &\geq 0.005 \times \text{Operating expenses}_{2011} \\ \text{Communication expenses}_{2013} &\geq 0.005 \times \text{Operating expenses}_{2012} \\ \text{Communication expenses}_{2014} &\geq 0.005 \times \text{Operating expenses}_{2013} \end{aligned}$$

$$\text{Communication expenses}_{2015} \geq 0.005 \times \text{Operating expenses}_{2014}$$

$$\text{Communication expenses}_{2016} \geq 0.0005 \times \text{Operating expenses}_{2015}$$

### 13. Litigation proceedings amounts

The litigation proceedings amounts allocated to solve problems with stakeholders should be less than or at least the same as the lowest amount in the previous periods.

$$\text{Litigation expenses}_t \leq \text{Lowest litigation expenses}_{t=1}^T$$

In the Contingent Liabilities section of the Notes to Financial Statements in the Annual Report, the actual or potential litigation amount was stated as presented in Table 6.12. The amount is related to a number of actions against the Company's Group, none of which were individually significant.

**Table 6.12 The amount of actual or potential litigation (in US\$ Million)**

	2006	2007	2008	2009	2010	2011
Actual or potential litigation amount	--	712	862	941	1,333	2,077

The lowest amount from the previous period was US\$ 712 million, which is expected to become the maximum amount of litigation expenses in the period of 2012-2016. The constraints for the litigation amount were formed as follows:

$$\text{Litigation expenses}_{2012} \leq 712$$

$$\text{Litigation expenses}_{2013} \leq 712$$

$$\text{Litigation expenses}_{2014} \leq 712$$

$$\text{Litigation expenses}_{2015} \leq 712$$

### 14. Female recruitment expenditure

It is expected that the company will increase the expenditure to recruit female employees (including any education programs for graduates) beyond the previous year at a rate amounting to the average ratio of such expenditures to operating expenses. The increase in expenses will not only be due to the inflation factor but mainly because of the Company's commitment to gender diversity in its workforce.

$$\text{Female recruitment expenses}_t \geq \left( \text{Average } \sum_{t=1}^T \frac{\text{Female recruitment expenses}}{\text{Total expenses}} \right) \times \text{Operating expenses}_{t-1}$$

Due to the unavailability of the data, an assumption was used to arbitrarily set the average ratio of the female recruitment expenditure at 0.00025 of total operating expenses. The constraints for female recruitment expenditure are as follows:

$$\text{Female recruitment expenses}_{2012} \geq 0.00025 \times \text{Operating expenses}_{2011}$$

$$\text{Female recruitment expenses}_{2013} \geq 0.00025 \times \text{Operating expenses}_{2012}$$

$$\text{Female recruitment expenses}_{2014} \geq 0.00025 \times \text{Operating expenses}_{2013}$$

$$\text{Female recruitment expenses}_{2015} \geq 0.00025 \times \text{Operating expenses}_{2014}$$

$$\text{Female recruitment expenses}_{2016} \geq 0.00025 \times \text{Operating expenses}_{2015}$$

15. Expenditure for leadership and mentoring programs for future female leaders

It is expected that the expenditure for leadership and mentoring programs will be higher or at least the same as in the previous year. In BHP Billiton, through the ALDP, female participation was expected to increase to 40% by the end of 2012.

$$\text{Female leadership program expenses}_t \geq \text{Female leadership program expenses}_{t-1}$$

For simplicity, it is assumed that the expenditure of the program will be 0.000125 of the operating expenses since no data are available in the financial statement. The constraints then became as follows:

$$\text{Female leadership program expenses}_{2012} \geq \text{Female leadership program expenses}_{2011}$$

Since the amount of operating expenses is predicted to increase, the constraints were re-written as follows:

$$\text{Female leadership program expenses}_{2012} \geq 0.000125 \times \text{Operating expenses}_{2011}$$

$$\text{Female leadership program expenses}_{2013} \geq 0.000125 \times \text{Operating expenses}_{2012}$$

$$\text{Female leadership program expenses}_{2014} \geq 0.000125 \times \text{Operating expenses}_{2013}$$

$$\text{Female leadership program expenses}_{2015} \geq 0.000125 \times \text{Operating expenses}_{2014}$$

$$\text{Female leadership program expenses}_{2016} \geq 0.000125 \times \text{Operating expenses}_{2015}$$

## 16. Research and development expenses

It is expected that research and development expenses for CSR activities will be stable at least in the average proportion of R&D expenses/operating expenses in previous periods (represented by  $\epsilon$ , which is 0.0041 in Table 6.4).

$$\mathbf{R\&D\ expenses}_t \geq \epsilon \mathbf{Operating\ expenses}_{t-1}$$

$$\mathbf{R\&D\ expenses}_{2012} \geq \mathbf{0.0041\ Operating\ expenses}_{2011}$$

$$\mathbf{R\&D\ expenses}_{2013} \geq \mathbf{0.0041\ Operating\ expenses}_{2012}$$

$$\mathbf{R\&D\ expenses}_{2014} \geq \mathbf{0.0041\ Operating\ expenses}_{2013}$$

$$\mathbf{R\&D\ expenses}_{2015} \geq \mathbf{0.0041\ Operating\ expenses}_{2014}$$

$$\mathbf{R\&D\ expenses}_{2016} \geq \mathbf{0.0041\ Operating\ expenses}_{2015}$$

## 17. Community contribution and environmental program expenditure ( $CC_t$ and $EPE_t$ )

Community contribution and environmental expenditure should be at least a certain percentage of pre-tax profit (represented here as  $Z$ ):

$$\mathbf{Community\ contribution}_t \geq \mathbf{Z\% \ Pre - tax\ profit}_t$$

$$\mathbf{Environmental\ program\ expenditure}_t \geq \mathbf{Z\% \ Pre - tax\ profit}_t$$

BHP Billiton has a policy that commits contributions to support the communities in which it operates. Community investments comprise cash, in-kind support and administrative costs. The targeted level of contribution is one percent of pre-tax profit.

$$\mathbf{Community\ contribution}_t \geq \mathbf{Z\% \ Pre - tax\ profit}_t$$

$$\mathbf{Community\ contribution}_t \geq \mathbf{1\% \ (EBIT}_t - i_t \mathbf{LTD}_t)$$

Using the interest rate of 6% and EBIT projection, as presented in Table 6.6, the constraint was rearranged as follows to determine the amount of contributions to the community as one of the decision variables:

$$\mathbf{Community\ contribution}_{2012} \geq \mathbf{1\% \ (EBIT}_{2012} - \mathbf{6\% \ LTD}_{2012})}$$

$$\mathbf{CC}_{2012} \geq \mathbf{1\% \ (32,182 - 6\% \ LTD}_{2012})}$$

$$\mathbf{CC}_{2013} \geq \mathbf{1\% \ (36,092 - 6\% \ LTD}_{2013})}$$

$$\mathbf{CC}_{2014} \geq \mathbf{1\% \ (40,477 - 6\% \ LTD}_{2014})}$$

$$CC_{2015} \geq 1\% (45,395 - 6\% LTD_{2015})$$

$$CC_{2016} \geq 1\% (50,911 - 6\% LTD_{2016})$$

For environmental program spending (including environmental programs in certain sites, site rehabilitation, environmental monitoring and other environment expenditure, such as environmental impact assessment and training), the data are only available for the years 2006 and 2007. This is because the Company's focus shifted to integrating environmental responsibility into all activities, meaning that it is not possible to extract accurate expenditure data relating to the environment and, for that reason, this was no longer reported in the Annual and Sustainability Reports after 2007. The amounts for 2006 and 2007 were US\$309 million and US\$288 million, respectively, which accounted for 2% and 1.6% of pre-tax profit. By assuming that the targeted level of contribution is 2% and the interest rate is 6%, the constraints for the environmental spending were constructed as follows:

$$\text{Environmental program expenditure}_t \geq Z\% \text{ Pre - tax profit}_t$$

$$EPE_t \geq 2\% (EBIT_t - 6\%LTD_t)$$

$$EPE_{2012} \geq 2\% (32,182 - 6\% LTD_{2012})$$

$$EPE_{2013} \geq 2\% (36,092 - 6\% LTD_{2013})$$

$$EPE_{2014} \geq 2\% (40,477 - 6\% LTD_{2014})$$

$$EPE_{2015} \geq 2\% (45,395 - 6\% LTD_{2015})$$

$$EPE_{2016} \geq 2\% (50,911 - 6\% LTD_{2016})$$

#### 18. Equal pay for women employees

$$\text{Female employees wages rate}_t - \text{Male employees wages rate}_t = 0$$

As discussed in Chapter 5, in the 2011 Sustainability Report, the company mentioned that during the year it had reviewed pay equity based on gender across the senior management population, which revealed a female to male salary ratio of 1.005:1.000. It is stated that BHP Billiton was satisfied that the process of remunerating employees in this grouping was based on skills, experience and size of role and was not tainted by structural bias on the basis of gender.

Unfortunately, BHP Billiton did not disclose the review results of pay equity for all employees. The amount of employee wages as one of the decision variables is

constrained by the equal pay for women employee constraint. The data on pay equity for all employees are needed and, since they are not available, it is assumed that they are equal (which means that the ratio of female to male salary is 1:1).

#### 19. Work-life balance policy

$$\text{Work – life balance policy expenses}_t \geq \text{Work – life balance policy expenses}_{t-1}$$

The work-life balance policy expenses comprise parental or maternity leave expenses, child-care facilities expenses (including the salaries of the child-care workers, facilities maintenance expenses and purchase expenses of the supplies and tools; or the company’s subsidy for the outside child-care expenses if such facilities are not provided), child benefits and/or other work-life balance policy expenses in accordance with the Company’s policy.

In this model, the pertinent expenses related to the work-life balance policy were budgeted to be at least the same as in the previous year. Such expenses will depend on the number of employees who are eligible.

Since the amounts spent for the work-life balance policy were not provided in the Annual and Sustainability Report, an assumption was made to predict the expenditure at the targeted level of 1% of total employee wages and benefits. The constraints then were arranged as follows:

$$\text{Work – life balance policy expenses}_{2012} \geq \text{Work – life balance policy expenses}_{2011}$$

As the amount of employee wages and benefits is projected to increase, the constraints of the work-life balance policy expenses were expressed as follows:

$$\text{Work – life balance policy expenses}_{2012} \geq 1\% \times \text{Employee wages and benefits}_{2012}$$

$$\text{Work – life balance policy expenses}_{2013} \geq 1\% \times \text{Employee wages and benefits}_{2013}$$

$$\text{Work – life balance policy expenses}_{2014} \geq 1\% \times \text{Employee wages and benefits}_{2014}$$

$$\text{Work – life balance policy expenses}_{2015} \geq 1\% \times \text{Employee wages and benefits}_{2015}$$

$$\text{Work – life balance policy expenses}_{2016} \geq 1\% \times \text{Employee wages and benefits}_{2016}$$

20. Cost savings from decrease in employee turnover

As discussed earlier, according to Cascio (1991), costs of turnover consist of separation costs, replacement costs and training costs. If a company can manage the employee turnover, there will be cost savings created and it is expected that turnover costs should be less than, or at least the same, as the previous period. Hence, the constraint becomes:

$$\text{Costs of employee turnover}_t \leq \text{Costs of employee turnover}_{t-1}$$

Since there are no data available for the amount of separation costs, replacement costs and training costs in the Annual and Sustainability Reports, a statistic on the average total costs of turnover from Mercer consulting (Mercer 2013) was used. It was predicted that the costs could be as high as 150% of employees' annual salaries. Assuming that the average annual salary is \$50,000 per employee, the employee turnover and number of employees is estimated as follows.

**Table 6.13 The estimation of the costs of turnover**

	2006	2007	2008	2009	2010	2011
<b>Actual number of:*</b>						
1. employees (percent increase)	37,762	39,947 (5.79)	41,732 (4.47)	40,990 (-1.78)	39,570 (-3.46)	40,757 (2.99)
2. turnover (%) (percent increase)	7.3	12 (64.4)	14 (16.7)	15.5 (10.7)	8.94 (-42.3)	8.83 (-1.2)
		<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>The estimation of:</b>						
3. employees (based on the average of percent increase 1.6%)		41,409	42,072	42,745	43,429	44,124
4. turnover (%) (based on assumed targeted level of turnover 9% in 2012 and decrease of 0.5% each year after)		3,727	3,576	3,420	3,257	3,089

Source: 2006-2011 Annual Reports

The constraints for the costs of employee turnover were arranged as follows:

**Costs of employee turnover<sub>2012</sub> ≤ 3,727 x US\$50,000 x 150%**  
**Costs of employee turnover<sub>2013</sub> ≤ 3,576 x US\$50,000 x 150%**  
**Costs of employee turnover<sub>2014</sub> ≤ 3,420 x US\$50,000 x 150%**  
**Costs of employee turnover<sub>2015</sub> ≤ 3,257 x US\$50,000 x 150%**  
**Costs of employee turnover<sub>2016</sub> ≤ 3,089 x US\$50,000 x 150%**

21. Expenses for women’s empowerment programs in the community group

It is expected that the women’s empowerment program expenditure will be higher or at least the same as the average amounts of expenditure in the previous periods.

$$\text{Women empowerment program}_t \geq \frac{\text{Women empowerment program}}{\text{Community contributions}_t}$$

where  $\frac{\text{Women empowerment program}}{\text{Community contributions}_t}$  represents the average portion of the empowerment program expenditure to the community contributions amount in the previous periods.

BHP Billiton disclosed the amount it spent for the program in its 2006, 2007 and 2008 Sustainability Report as presented in Table 6.14.

**Table 6.14 The expenditures for women empowerment program in community group (US\$)**

	<b>2006</b>	<b>2007</b>	<b>2008</b>
Support for women's capacity building projects for NGOs to address gender issues (non-health related)	596,000	148,100	
Support for women in leadership	4,000	16,300	
Awards/recognition especially for women		3900	
Promote gender equality and empower women			546,294
<b>Total amount spent</b>	<b>600,000</b>	<b>168,300</b>	<b>546,294</b>
<b>Community contributions</b>	<b>81.3 million</b>	<b>103.4 million</b>	<b>141 million</b>
<b>Portion of total amount spent for women’s empowerment programs to community contribution</b>	<b>0.74%</b>	<b>0.16%</b>	<b>0.39%</b>
<b>Average portion</b>	<b>0.43%</b>		

As depicted in Table 6.14, the average portion is 0.43%, which was entered into the constraints as follow:

**Women empowerment program<sub>2012</sub> ≥ 0.43% x Community contributions<sub>2012</sub>**  
**Women empowerment program<sub>2013</sub> ≥ 0.43% x Community contributions<sub>2013</sub>**  
**Women empowerment program<sub>2014</sub> ≥ 0.43% x Community contributions<sub>2014</sub>**  
**Women empowerment program<sub>2015</sub> ≥ 0.43% x Community contributions<sub>2015</sub>**  
**Women empowerment program<sub>2016</sub> ≥ 0.43% x Community contributions<sub>2016</sub>**

## 6.6 Analysis of results

The optimal output generated by the simplex algorithm using the Premium Solver application in Microsoft Excel consists of values for each decision variables for a five-year future period (t = 2012-2016). The output is provided in the Answer Report generated by the Solver application, as presented in Appendix 1.

Based on these optimal solutions and other projections already carried out in the previous section, the pro forma financial data and key financial ratios of BHP Billiton for the period of 2012-2016 were constructed. These are presented in Table 6.15.

**Table 6.15 BHP Billiton's Pro forma financial data (in US\$ Million) and key ratios**

	2012	2013	2014	2015	2016
Economic value generated (revenues: net sales revenue plus other income)	82,413	94,034	107,292	122,421	139,682
Economic value distributed:					
1. Payments to suppliers, contractors, etc	29,643	42,389	60,617	86,682	123,956
2. Employee wages and benefits	5,915	6,376	6,874	7,410	7,988
3. Payments to providers of capital: shareholder dividends	6,181	7,559	9,245	11,307	13,828
4. Payments to providers of capital: interest payments (6% of long-term debt)	1,532	1,719	1,927	2,162	2,424
5. Payments to government: gross taxes and royalties	9,195	10,312	11,565	12,970	14,546
6. Community contribution	307	344	386	432	485
7. Environmental expenditure:					
a. Environmental research expenditure	500	500	500	500	500
b. Environmental costs	620	611	603	594	586
c. Environmental program expenditure	613	688	771	865	970
d. Biodiversity and land	4.4	4.4	4.4	4.4	4.4

	2012	2013	2014	2015	2016
management expenditure					
Total economic value distributed	54,510.4	70,502.4	92,492.4	122,926.4	165,287.4
<b>Economic value retained</b>	<b>27,902.6</b>	<b>23,531.6</b>	<b>14,799.6</b>	<b>-505.4</b>	<b>-25,605.4</b>
<b>Total economic value retained</b>	<b>40,122</b>				

**Table 6.15 (Continued)**

	2012	2013	2014	2015	2016
<b>A.</b>					
Sales revenue	80,455	90,230	101,193	113,488	127,277
Operating expenses	50,231	57,942	66,815	77,026	88,771
Total environmental fines	0.06	0.07	0.08	0.09	0.10
HSEC expenditures	50	55	61	67	73
Communication expenses	251	290	334	385	444
Litigation expenses	712	712	712	712	712
Female staff recruitment expenditure	10	13	14	17	19
Female leadership program expenses	5.06	6.28	7.24	8.35	9.63
Research and development expenses	166	206	238	274	316
Work-life balance policy expenses	59	64	70	75	82
Costs of employee turnover	280	268	257	244	232
Women empowerment program expenses	1.32	1.48	1.66	1.86	2.08
<b>Profit from operations (EBIT)</b>	<b>32,182</b>	<b>36,092</b>	<b>40,477</b>	<b>45,395</b>	<b>50,911</b>
<b>After tax profit</b>	<b>21,454</b>	<b>24,061</b>	<b>26,985</b>	<b>30,264</b>	<b>33,941</b>
<b>B.</b>					
Current assets	29,970	33,611	37,695	42,274	47,411
Assets	119,878	134,443	150,778	169,097	189,643
Investments in financial assets	839	941	1,055	1,184	1,328
Investments in capital assets (property, plant and equipment)	82,162	98,594	118,313	141,976	170,371
Current liabilities	21,106	23,670	26,546	29,770	33,388
Provisions	9,079	10,350	11,799	13,451	15,334
Long-term debt (interest bearing liabilities)	25,541	28,644	32,125	36,028	40,406
<b>Key ratios</b>					
Interest coverage ratio	21x	21x	21x	21x	21x

	2012	2013	2014	2015	2016
Current ratio	1.42	1.42	1.42	1.42	1.42
Ratio of female to male salary	1:1	1:1	1:1	1:1	1:1

As shown in Table 6.15, it is predicted that in the years 2015 and 2016, the Company will have a negative economic value retained (US\$ -505.4 million and US\$ -25,605.4 million respectively) despite the positive after tax profit projected in those years. This implies that to maintain a positive economic value retained, the company should increase its revenues and/or decrease certain expenses. By doing so, the Company will also maintain its business sustainability by distributing economic value to its stakeholders without sacrificing its revenues and profit-generating ability.

### 6.7 Sensitivity analysis

Formulating and solving an optimisation or linear programming model does not necessarily mean that the decision problem has been solved. Since it is formed as a projection, no relevant factors are known with certainty. Sensitivity analysis can assist managerial decisions in this area by providing a better description of how the solution to a problem may change if different factors in the model change.

The Solver application in MS Excel also provides sensitivity information after solving an optimisation problem. The information is generated in a Sensitivity Report, as can be seen in Appendix 2. The allowable increases and decreases column in the decision variables cells section refer to the allowable increases and decreases in the values of the original objective function coefficients associated with the variable cells without changing the optimal solution, assuming all other coefficients remain constant. In the constraint section, there is a shadow price column, which indicates the amount by which the objective function value changes given a unit increase in the right-hand side value of the equation or inequality constraints, assuming all other coefficients remain constant. If the shadow price is positive, a unit increase in the right-hand side value of the associated constraint will result in an increase in the optimal objective function value and vice versa.

In regards to the negative economic value retained as projected for 2015 and 2016, the Company can prepare several alternative plans and analyse the impact in the financial condition. In other words, the Company can exercise some action plans assuming that it intends to maintain a positive economic value retained in the years to come. These plans are also part of the sensitivity analysis, to gain an understanding of the impact that the changes in projections may have on the original result. This will assist in the decision making process to determine the appropriate strategic actions to achieve the Company's objective. Some alternatives or scenarios are discussed below.

### **Scenario 1: Increase the revenue**

Assume that the Company plans to have revenue and sales revenue growth of 20% and 15%, respectively. These are an increase from the original projections of 14.10% growth in revenue and 12.15% growth in sales revenue based on the average of growth in 2006-2011, as presented in Table 6.4.

After calculating the changes to the other accounts due to the changes in growth projection, the financial data was calculated, as presented in Table 6.16 (the Solver output for this scenario is presented in Appendix 3).

**Table 6.16 BHP Billiton's pro forma financial data (in US\$ million) for Scenario 1: increase the revenues**

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Economic value generated (revenues: net sales revenue plus other income)	86,675	104,010	124,812	149,774	179,729
Economic value distributed:					
1. Payments to suppliers, contractors, etc	29,643	42,389	60,617	86,682	123,956
2. Employee wages and benefits	5,915	6,376	6,874	7,410	7,988
3. Payments to providers of capital: shareholder dividends	6,181	7,559	9,245	11,307	13,828
4. Payments to providers of capital: interest payments (6% of long-term debt)	1,532	1,719	1,927	2,162	2,424
5. Payments to	9,440	10,869	12,515	19,428	22,360

	2012	2013	2014	2015	2016
government: gross taxes and royalties					
6. Community contribution	315	363	417	480	553
7. Environmental expenditure:					
a. Environmental research expenditure	500	500	500	500	500
b. Environmental costs	620	611	603	594	586
c. Environmental program expenditure	629	725	834	961	1,106
d. Biodiversity and land management expenditure	4.4	4.4	4.4	4.4	4.4
Total economic value distributed	54,779.4	71,115.4	93,536.4	129,528.4	173,305.4
<b>Economic value retained</b>	<b>31,895.6</b>	<b>32,894.6</b>	<b>31,275.6</b>	<b>20,245.6</b>	<b>6,423.6</b>
<b>Total economic value retained</b>	<b>122,735</b>				

**Table 6.16 (Continued)**

	2012	2013	2014	2015	2016
<b>A.</b>					
Sales revenue	82,500	94,875	109,106	125,472	144,293
Operating expenses	54,605	65,526	78,632	94,358	113,229
Total environmental fines	0.06	0.07	0.08	0.10	0.11
HSEC expenditures	55	61	67	73	81
Communication expenses	202	273	328	393	472
Litigation expenses	712	712	712	712	712
Female staff recruitment expenditure	10	14	16	20	24
Female leadership program expenses	5.06	6.83	8.19	9.83	11.79
Research and development expenses	166	224	269	322	387
Work-life balance policy expenses	59	64	69	74	80
Costs of employee turnover	280	268	257	244	232
Women empowerment program expenses	1.35	1.56	1.79	2.07	2.38
<b>Profit from operations (EBIT)</b>	<b>33,000</b>	<b>37,950</b>	<b>43,642</b>	<b>50,189</b>	<b>57,717</b>
<b>After tax profit</b>	<b>21,454</b>	<b>24,061</b>	<b>26,985</b>	<b>30,264</b>	<b>33,941</b>
<b>B.</b>					

Current assets	30,731	35,341	40,642	46,738	53,749
Assets	122,925	141,364	162,568	189,953	214,997
Investments in financial assets	860	990	1,138	1,309	1,505
Investments in capital assets (property, plant and equipment)	82,162	98,594	118,313	141,976	170,371
Current liabilities	21,642	24,888	28,621	32,914	37,851
Provisions	9,079	10,350	11,799	13,451	15,334
Long-term debt (interest bearing liabilities)	25,541	28,644	32,125	36,028	40,406
<b>Key ratios</b>					
Interest coverage ratio	21x	21x	21x	21x	21x
Current ratio	1.42	1.42	1.42	1.42	1.42
Ratio of female to male salary	1:1	1:1	1:1	1:1	1:1

As shown in Table 6.16, the economic value retained is increased and positive for the period 2012-2016, if the Company can reach an increase in revenues of 20%. Following this, the Company can prepare a strategy to increase revenues (especially through sales and marketing strategies) to allow for contributions to the stakeholders through the distribution of economic value without ignoring bottom line profitability.

### **Scenario 2: Decrease certain expenses**

Suppose that the Company chooses another alternative or scenario to decrease certain expenses rather than increasing revenues. The expenses to be cut were selected using a Sensitivity Analysis report, as shown in Appendix 2. The expenses with significant amounts and shadow prices were chosen as the price indicates the amount by which the objective function value changes given a unit increase in the right-hand side value of the equation or inequality constraints. If a shadow price is positive, a unit increase in the right-hand side value of the constraint will result in an increase in the optimal objective function value. If the shadow price is negative, a unit increase in the right-hand side value of the constraint will result in a decrease in the optimal objective function value. The shadow price values will apply if the increase or decrease in the right-hand side value falls within the allowable increase or allowable decrease limits for each constraint, as depicted in the Sensitivity Report.

The selected expenses were as follows:

a. Payments to suppliers and contractors

In the original model, the payments to suppliers and contractors for goods and services acquisition were expected to increase at least at 0.098 growth rate. Suppose that the Company wants to cut the growth to 0.05 through several strategies, including finding new suppliers who can provide the goods and services at cheaper prices without sacrificing the quality, and involving local contractors with cheaper rates.

b. Employee wages and benefits

Assume that the Company has a plan to decrease wages and benefits without causing major disadvantage to employees. Strategies may include, but are not limited to, employing local employees on a contract basis rather than on a full-time basis, increasing the skills of current employees to handle multiple tasks to avoid high recruitment of new employees, or offering the benefits in terms of share ownership.

Strategies could go even further, to a review of the importance of “stay-survive” under the equal pay and equal employment opportunity policy. In a condition to stay-survive there is a possibility that a company may be tempted or even forced to have an unequal pay policy towards female employees for cost saving purposes. A study carried out by the Workplace Gender Equality Agency (WGEA) in 2013 found that the pay gap between men and women is now larger compared to twenty years ago. While this is not in line with the ethics of care principle, the unequal pay policy could be justified only in an emergency condition when a company is trying to stay-survive.

Suppose that the stay-survive condition does not happen in the BHP Billiton case, so the Company prepares some strategies to decrease employee wages and benefits while still maintaining the equal pay and equal opportunity policy. In the original model, the amount was predicted to increase to a rate of 0.078.

Assume that in Scenario 2, the Company intends to decrease expenses to a 0.04 growth rate.

After entering the changes to the selected expenses, the output from Premium Solver Excel was produced and are provided in Appendix 4. The results are also presented in Table 6.17.

**Table 6.17 BHP Billiton’s pro forma financial data (in US\$ Million) for Scenario 2:  
decrease certain expenses**

	2012	2013	2014	2015	2016
Economic value generated (revenues: net sales revenue plus other income)	82,413	94,034	107,292	122,421	139,682
Economic value distributed:					
1. Payments to suppliers, contractors, etc	28,347.00	40,536.21	57,966.78	82,892.50	118,536.27
2. Employee wages and benefits	5,675.00	5,902.00	6,138.08	6,383.60	6,638.95
3. Payments to providers of capital: shareholder dividends	6,181	7,559	9,245	11,307	13,828
4. Payments to providers of capital: interest payments (6% of long-term debt)	1,532	1,719	1,927	2,162	2,424
5. Payments to government: gross taxes and royalties	9,195	10,312	11,565	12,970	14,546
6. Community contribution	307	344	386	432	485
7. Environmental expenditure:					
a. Environmental research expenditure	500	500	500	500	500
b. Environmental costs	620	611	603	594	586
c. Environmental program expenditure	613	688	771	865	970
d. Biodiversity and land management expenditure	4.4	4.4	4.4	4.4	4.4
Total economic value distributed	52,974.4	68,175.61	89,106.26	118,110.5	158,518.62
<b>Economic value retained</b>	<b>29,438.6</b>	<b>25,858.39</b>	<b>18,185.74</b>	<b>4,310.5</b>	<b>-18,836.32</b>
<b>Total economic value retained</b>	<b>58,956</b>				

**Table 6.17 (Continued)**

	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Sales revenue	80,455	90,230	101,193	113,488	127,277
Operating expenses	50,231	57,942	66,815	77,026	88,771
Total environmental fines	0.06	0.07	0.08	0.09	0.10
HSEC expenditures	50	55	61	67	73
Communication expenses	251	290	334	385	444
Litigation expenses	712	712	712	712	712
Female staff recruitment expenditure	10	13	14	17	19
Female leadership program expenses	5.06	6.28	7.24	8.35	9.63
Research and development expenses	166	206	238	274	316
Work-life balance policy expenses	57	59	61	64	66
Costs of employee turnover	280	268	257	244	232
Women empowerment program expenses	1.32	1.48	1.66	1.86	2.08
<b>Profit from operations (EBIT)</b>	<b>32,182</b>	<b>36,092</b>	<b>40,477</b>	<b>45,395</b>	<b>50,911</b>
<b>After tax profit</b>	<b>21,454</b>	<b>24,061</b>	<b>26,985</b>	<b>30,264</b>	<b>33,941</b>
Current assets	29,970	33,611	37,695	42,274	47,411
Assets	119,878	134,443	150,778	169,097	189,643
Investments in financial assets	839	941	1,055	1,184	1,328
Investments in capital assets (property, plant and equipment)	82,162	98,594	118,313	141,976	170,371
Current liabilities	21,106	23,670	26,546	29,770	33,388
Provisions	9,079	10,350	11,799	13,451	15,334
Long-term debt (interest bearing liabilities)	25,541	28,644	32,125	36,028	40,406
<b>Key ratios</b>					
Interest coverage ratio	21x	21x	21x	21x	21x
Current ratio	1.42	1.42	1.42	1.42	1.42
Ratio of female to male salary	1:1	1:1	1:1	1:1	1:1

From Table 6.17, it can be seen that after reducing two expenditure amounts, the total economic value retained increased from the original result even though it was predicted to be negative in 2016. The Company can choose to decrease other

expenses or mix the decision to simultaneously increase revenues and decrease certain expenses to achieve the proposed objective of maximising stakeholder interests through the economic value retained based on the ethics of care principle. Besides using the Sensitivity Report, the decisions made for the sensitivity analysis can also be guided by the Company's strategies on prioritising certain types of revenues or expenses. The Sensitivity Report should be viewed as providing assistance for such decision making process instead of as primary guidance.

## 6.8 Comparison of projected and actual data for the years 2012 and 2013

The comparison of forecast results with the actual data is presented in Table 6.18.

**Table 6.18 Comparison of projected and actual data of BHP Billiton  
for the years 2012 and 2013**

	2012 Prediction	2012 Actual	Diffe- rence (%)	2013	2013 Actual	Diffe- rence (%)
Economic value generated (revenues: net sales revenue plus other income)	82,413	73,016	-13%	94,034	66,732	-41%
Economic value distributed:						
1. Payments to suppliers, contractors, etc	29,643	29,243	-1%	42,389	28,036	-51%
2. Employee wages and benefits	5,915	6,915	14%	6,376	7,618	16%
3. Payments to providers of capital: shareholder dividends	6,181	5,877	-5%	7,559	6,167	-23%
4. Payments to providers of capital: interest payments (6% of long-term debt)	1,532	755	-103%	1,719	1,031	-67%
5. Payments to government: gross taxes and royalties	9,195	11,862	22%	10,312	11,597	11%
6. Community contribution	307	214	-43%	344	246	-40%
7. Environmental expenditure:						
a. Environmental research expenditure	500	Data not available		500	Data not available	

	2012 Prediction	2012 Actual	Diffe- rence (%)	2013	2013 Actual	Diffe- rence (%)
b. Environmental costs	620	Data not available		611	Data not available	
c. Environmental program expenditure	613	Data not available		688	Data not available	
d. Biodiversity and land management expenditure	4.4	Data not available		4.4	Data not available	
Total economic value distributed	54,510.4			70,502.4		
Economic value retained	27,902.6			23,531.6		

**Table 6.18 (Continued)**

	2012 Prediction	2012 Actual	Diffe- rence (%)	2013	2013 Actual	Diffe- rence (%)
Sales revenue	80,455	72,226	-11%	90,230	65,968	-37%
Operating expenses	50,231	49,380	-2%	57,942	50,873	-14%
Total environmental fines	0.06	0.027	-122%	0.07	0.20	65%
HSEC expenditure	50	Data not available		55	Data not available	
Communication expenses	251	Data not available		290	Data not available	
Litigation expenses	712	2,096	66%	712	2,700	74%
Female staff recruitment expenditure	10	Data not available		13	Data not available	
Female leadership program expenses	5.06	Data not available		6.28		
Research and development expenses	166	75	-121%	206	64	-222%
Work-life balance policy expenses	59	Data not available		64	Data not available	
Costs of employee turnover	280	Data not available		268	Data not available	
Women empowerment program expenses	1.32	Data not available		1.48	Data not available	
Profit from operations (EBIT)	32,182	23,752	-35%	36,092	19,225	-88%
After tax profit	21,454	15,532	-38%	24,061	11,075	-117%

**Table 6.18 (Continued)**

	<b>2012 Prediction</b>	<b>2012 Actual</b>	<b>Diffe- rence (%)</b>	<b>2013</b>	<b>2013 Actual</b>	<b>Diffe- rence (%)</b>
Current assets	29,970	20,451	-47%	33,611	19,786	-70%
Assets	119,878	129,273	7%	134,443	138,109	3%
Investments in financial assets	839	2,163	61%	941	1,857	49%
Investments in capital assets (property, plant and equipment)	82,162	95,247	14%	98,594	102,927	4%
Current liabilities	21,106	22,034	4%	23,670	20,372	-16%
Provisions	9,079	11,698	22%	10,350	8,864	-17%
Long-term debt (interest bearing liabilities)	25,541	24,799	-3%	28,644	35,165	19%
Key ratios						
Interest coverage ratio	21x	33x	36%	21x	19x	-11%
Current ratio	1.42	0.93	-53%	1.42	0.97	-46%
Ratio of female to male salary	1:1	1:1.034		1:1	1:1.066	

Based on the comparison presented in Table 6.18, it can be seen that there are several items that cannot be compared due to the unavailability of the data in the published reports (Sustainability Report and Annual Report). This data might be available in the Company's accounting system but are not disclosed because of any number of reasons, including immateriality or the fact that the cost of extracting the data is deemed to outweigh the benefits of presenting it in published statements.

Most of the comparisons are negative which means that the projected data are larger amounts compared to the actual figures. This is normal in the estimation process, signifying the importance of managerial judgement accompanying the results provided by the forecast. Managers or planners could effectively use the model in a simulation scheme to exercise "what if" questions, as has been demonstrated in the sensitivity analysis section.

Several things are noteworthy in the results. In 2012 and 2013, the actual litigation expenses were significantly higher than expected and also increased from 2011 (which was US\$ 2,077 million). Unfortunately, accurate communication expenses data were not available so it cannot be precisely determined which approach the Company has performed in solving its problem with stakeholders: is it through legal action, as predicted by the ethics of justice, or has it moved to a more communicative approach, as suggested by the ethics of care?

The last interesting fact is that the ratios of female and male salaries in 2012 and 2013 were unfavourable to female employees, as the ratios were increased meaning that a pay equity gap exists. The true reason behind this was not disclosed, but hopefully the gap does not represent a negative financial condition that has forced the Company to pay its female employees less.

## **6.9 Summary**

This chapter has presented the quantitative optimisation model, its results and an interpretative discussion. In line with the feminist ethics of care, the model was developed using the economic value retained as the objective function and three sets of constraints: the accounting definitional constraint, the investment constraint and the corporate governance policy from the feminist perspective constraint. Based on the financial data of 2006-2011, the projection was performed for the five-year period of 2012-2016. The results suggest that the Company could achieve an overall positive economic value retained in the projected period. However, the economic value retained for 2015 and 2016 showed a negative result. Sensitivity analyses were conducted to discover the impact on the projected financial condition, especially on the economic value retained. The sensitivity analysis represents an example of the managerial discretion and judgement that should be used to complement the analysis provided by the mathematical estimation.

Further analyses, comparing the projected versus the actual data for 2012 and 2013, revealed that the projected data values increased, which is typical in the projection process. Several items could not be compared because the data was not publicly

available. For instance, it could not be determined how BHP Billiton solved identified problems with its stakeholders, as no data on communication expenses as the proxy of the ethics of care were disclosed. Pay equity gaps existed in 2012 and 2013, however, again, the justifications for these were not disclosed by BHP Billiton.

Despite the limitations in accessing the unpublished data, the model presented in this chapter provides an example of how the feminist ethics of care theory can be systematically built into a practical model to explore its economic implications, as indicated by Folbre (1995), whose quotation is presented at the beginning of this chapter. With data accessibility and/or the availability of the accounting system specifically designed under the ethics of care principles, these limitations could be overcome to provide better estimations and analysis in the future.

## CHAPTER 7 CONCLUSION

*Because we are mortal, every talent, skill, ability we possess, every thought and feeling we ever have, every beautiful sight we ever see, every material possession we own, will ultimately be lost ... Unless we share it.*

(The editors of Conari Press from "The Practice of Kindness" 1993)

### 7.1 Introduction

The issue of unethical business conduct, including financial fraud, is usually attributed to flaws in corporate governance that fail to protect stakeholders. Banks (2004) identified several flaws, such as failure within the board of directors or top management, ineffective internal controls, corporate policies and inadequate regulations. This thesis has offered a feminist ethics perspective to help remedy certain flaws in corporate governance resulting from the failure to set and to exercise ethical conduct from the top. Although it only works partially and cannot eliminate all flaws in governance, the feminist ethics of care can provide a complementary approach to rules and laws associated with the ethics of justice.

The different concerns of the ethics of care and the “masculinist” ethics of justice have been discussed in Chapter 2. The main difference lies in the emphasis of the ethics of care on responsibility, relationships and connection between individuals in stakeholder groups compared to the emphasis of the ethics of justice on rules and separation of self from others. The main difference brings about a distinct approach in several aspects, including in finding solutions to problems with stakeholders. According to the ethics of care, “dialogue” and effective communication are prioritised over rules or legal proceedings. The main difference also results in an additional risk management approach as part of effective corporate governance. Social and environmental risk management is also included, based on the interpretation of the ethics of care to complement financial and operational risk management.

Considering the potential benefit of the care theory to strengthen the corporate governance theory, this thesis aimed at analysing the current corporate governance

practices from the feminist ethics of care perspective. As unethical business conduct also has financial consequences, this thesis also endeavoured to offer the application of “caring” corporate governance into the financial planning strategies of a company. This represents this study’s contribution at the practical level to complement the analysis at the theoretical level.

Two research questions and two propositions have been answered in this research, as follows:

1. *Research question:* What are the existing corporate governance practices applied in a sample company from the feminist ethics of care perspective?

*Proposition:* The interpretation of the feminist ethics of care will result in a stakeholder model of corporate governance that places more emphasis on women’s interests and maintaining good relationships with stakeholders.

2. *Research question:* After examining the existing corporate governance practices, how will the financial condition of the company be affected if the feminist ethics of care is applied?

*Proposition:* It is projected that the financial condition will be stable, as the company will put more effort into balancing stakeholder interests while addressing social and environmental risk.

Mixed methods were used to answer the research questions. For the first question, the analysis of corporate governance practices from the feminist ethics of care perspective was performed using qualitative content analysis of annual reports and sustainability reports of BHP Billiton (as the case study company). Following the analysis, the financial planning model was designed using a quantitative optimisation method to answer the second question.

The following sections present the summary of the principles and interpretation of the corporate governance practice from the feminist ethics perspective, major findings and results, implications and research limitations.

## **7.2 Corporate governance practices from the ethics of care perspective**

The “original” principles of the ethics of care, as developed by Gilligan (1982) are as follows:

1. The care approach is achieved through perception of one’s self as connected to others.
2. Moral dilemmas are contextual.
3. Dilemmas are solved through inductive thinking.
4. The moral development through stages is sequential and hierarchical.
5. Principle of moral responsibility is reflected in the voices of women.
6. Distinguished by an emphasis on attachments, issues of self-sacrifice and selflessness and consideration of relationships as primary.

This thesis added two more principles to this list, based on the interpretation of the application of the ethics of care to the corporate governance practices. as explained in Chapter 3. These additional principles are:

7. The nature of CSR activities should not only be mandatory or compulsory but also, more importantly, voluntary or discretionary.
8. More attention is placed on women’s interests.

The seventh principle was added based on the ethics of care’s emphasis on maintaining good relationships with other parties. This is translated into a stakeholder model of corporate governance. However, distinct from stakeholder theory, the feminist approach suggests caring not only for the contractual stakeholder group, but also for the non-contractual ones, like the environment. The care theory also suggests that interdependence in the network of relationships occurs between and among the individuals who comprise those groups instead of interdependence simply between groups, as suggested by stakeholder theory. A translation of the caring approach to the stakeholder groups is performed through several CSR activities.

The last principle focused on more attention being placed on women's interests was added based on the interpretation that when the feminist ethics of care is applied in corporate governance practices it should acknowledge women as a part of the stakeholder groups and recognise their interests accordingly. This is rooted in women's nature and experiences that is the foundation of the feminist ethics of care. The interpretation of paying more attention to women's interests represents one of the contributions of this research in the area of stakeholder aspects of corporate governance from the feminist ethics of care perspective.

The feminist stakeholder theory is also represented in the first basic principle: that the caring approach is achieved through perceptions of one's self as connected to others. This principle is further divided into feminist stakeholder sub-principles as follows (Wicks, Gilbert and Freeman 1994):

- a. Corporations are webs of relationships among stakeholders.
- b. Corporations should thrive on chaos and environmental change.
- c. Replace conflict and competition with communication and collective action.
- d. Strategy as solidarity.
- e. Replace hierarchy with radical decentralisation and empowerment.

These principles and sub-principles informed the analysis of corporate governance practices from the ethics of care perspective, using the qualitative content analysis, and the development of the financial planning model, using the quantitative optimisation method. Major findings are summarised in the following section.

### **7.3 Major findings and results from the qualitative content analysis**

The first research question: "What are the corporate governance practices applied in a sample company from the feminist ethics of care perspective?" was answered using the qualitative content analysis based on the principles and sub-principles explained above.

BHP Billiton was chosen as the sample company for this research. The qualitative content analysis was performed using its annual reports and sustainability reports for the

years 2006-2011. As indicated, the content analysis protocol was designed based on the principles and sub-principles of corporate governance practices from the feminist ethics perspective. The findings and results are as follows:

1. The care approach was achieved through perception of one's self as connected to others.

a) Corporations are webs of relationships among stakeholders.

The notion of a corporation as a web of relationships among stakeholders was explicitly mentioned in BHP Billiton's reports. Relationships were maintained through the stakeholder engagement program, supported by the organisational structure and were reflected in the Zero Harm goal to minimise harm to people, host communities and the environment.

b) Corporations should thrive on chaos and environmental change.

The harmonious relationship with the dynamic business environment was upheld through sustainability and risk management programs, designed to handle business, social and environmental risks.

c) Replace conflict and competition with communication and collective action.

Two cases (Caroona Coal Project in New South Wales, Australia and a labour strike in South Africa), which were disclosed in the Sustainability Reports, were studied to gain an understanding of how BHP Billiton handled conflict of interest among stakeholders. Both cases showed that the approach taken by BHP Billiton to solve problems was not consistent with the ethics of care, as legal proceedings were prioritised over extensive communication and collective action.

d) Strategy as solidarity.

Statements in the Company's reports relating to general corporate strategy and several specific strategies showed that strategy formulation at BHP Billiton has been performed using the solidarity concept with various stakeholders.

e) Replace hierarchy with radical decentralisation and empowerment.

The decentralised authority at BHP Billiton was reflected in the responsibility of day-to-day business operations within nine Customer Sector Groups.

2. Moral dilemmas are contextual.

Two cases were studied to analyse whether the Company applied the contextual resolution to solve moral dilemmas. These cases are Cerrejon Coal in Columbia and the IndoMet Coal Project in Indonesia. The contextual approach was not consistently applied in the first case because the relocation problem for the local communities is still unresolved, after almost 30 years, and the solutions offered were not contextually applied to solve the moral dilemma. This means that, overall, the approach to moral dilemmas was not fully consistent with the ethics of care.

3. Dilemmas are solved through inductive thinking.

The inductive approach was also not fully consistent with the ethics of care. This conclusion was drawn after analysing two cases, one involving bribery of the Cambodian government and the other relating to land compensation for semi-nomadic communities. The inductive mode was followed in the land compensation case but not in the bribery case.

4. The moral development through stages is sequential and hierarchical.

Two cases were analysed to gain understanding of moral development at BHP Billiton. These are the Ok Tedi Mine in Papua New Guinea and Olympic Dam Mine in South Australia. Sequential and hierarchical moral development was not consistent with the ethics of care in the first case, but seemed to improve in the second case.

5. Principle of moral responsibility is reflected in the voices of women.

This principle was not supported at BHP Billiton as the percentage of female executives and staff remained stable at less than 20% during the period studied.

6. Distinguished by an emphasis on attachments, issues of self-sacrifice and selflessness and consideration of relationships as primary.

A lack of care approach was evident in several of the analysed cases (the Carooona Coal project, the labour strike, Cerrejon Coal, and the Ok Tedi Mine), which suggests that corporate governance practices in this aspect were not consistent with the ethics of care.

7. The nature of CSR activities should not only be mandatory or compulsory but also, more importantly, voluntary or discretionary.

The Company has put considerable effort into performing various voluntary CSR activities which were disclosed in its reports.

8. Women's interests in various stakeholder groups are acknowledged.

BHP Billiton has acknowledged women's interests in the employee group and other stakeholder groups, even though women were not explicitly mentioned as stakeholders.

Overall, the findings and results suggest that the corporate governance practices at BHP Billiton have not been fully consistent with the ethics of care principles. Hence, the first proposition was not fully supported by the research findings and results.

#### **7.4 Major findings and results from the quantitative optimisation model**

The second research question: "How will the financial condition of the company be affected if the feminist ethics of care is applied in its corporate governance practices?" was answered using the quantitative optimisation model.

The ethics of care principles and sub-principles again were used to develop the optimisation model, which consists of objective functions, decision variables, and constraint functions. The model was designed as an example of financial management strategies a company might take to finance activities necessary to follow the principles suggested by the ethics of care, while still maintaining the bottom-line profit.

In line with the ethics of care, the objective function in the model is the maximisation of the stakeholders' interests, which are proxied by the economic value retained in this research. The constraint functions consist of three sets of constraints, namely, the accounting definitional constraints, investments constraints, and policy constraints derived from the interpretation of corporate governance practices from the feminist ethics perspective.

The projection of the financial condition for the five-year period 2012-2016 was conducted based on the financial data of 2006-2011. The results suggest that BHP Billiton could achieve an overall positive economic value retained in the projected period even though negative results exist for 2015 and 2016. Sensitivity analysis was performed by providing two scenarios (i. increase revenues or ii. decrease certain expenses). These represent options that BHP Billiton could take to show an impact on the projected financial condition. Based on the findings and results, it was predicted that the financial condition would be stable in the future, which supports the second proposition.

Further analysis was done by comparing the projected and actual data for 2012 and 2013, as the data for these two years was available at the completion stage of this thesis. Unfortunately, several data could not be compared since the actual data was not available or not disclosed in the published sustainability and annual reports. Comparisons of the available data showed that the projected data values are greater than the actual ones, resulting in negative differences in percentages. This is normal in the estimation process and reflects the fact that the projection conducted in this thesis was somewhat pessimistic. It also highlights the importance of managerial judgements when using and interpreting the forecast results.

Comparison between the projected and actual data for 2012 and 2013 also revealed that a pay equity gap existed. While the true reason behind this is not disclosed, the facts reduce the impact of the results relating to the principle of acknowledging women's interests as part of BHP Billiton's stakeholder groups, as identified using the qualitative approach.

## **7.5 Implications**

The implications of this research are as follows:

1. The application of the ethics of care in corporate governance practices requires substantial effort to maintain harmonious relationships with stakeholders, including finding solutions to problems with various stakeholders and solving moral dilemmas.

However, despite the required effort, the ethics of care principles are worthy of applying in a company's corporate governance practices to complement problem solving based on rules and laws. The contextual and caring approach can assist as a framework for a company to design a more suitable stakeholder engagement program to maintain relationships with stakeholders that will become one source of business success in the future.

2. A sophisticated financial planning model can be developed to inform financial management strategies for the future, to perform sustainability activities without sacrificing the profit objective. However, as the model requires accurate accounting and financial data, a company accounting system should be designed to capture and record the required data input, such as the externalities amount, the extensive communication with stakeholders amount and the expenses amount related to women's interests in the employee group and other stakeholder groups.
3. If the ethics of care become more popular in the future, for investors, academics and other stakeholders to analyse the corporate governance practices of a company through the disclosures in the publicly available report, an accurate accounting system should also be designed to assist the company in producing and disclosing necessary items and amounts in line with the ethics of care principles.
4. Despite the attention given to the ethics of care in this thesis, it does not mean that the rights, fairness and rules as suggested by the ethics of justice should be disregarded. Gilligan herself believed that rights are an essential, although not a dominant, component of caring (Liedtka 2009). Without rights, 'the injunction to care is paralysing, rights allow us to appropriately value self-interest ... to act responsively towards self *and* others and thus to sustain connection" (Gilligan 1982, p. 149). The ethics of care and ethics of justice are complementary; they are incomplete without each other. The justice approach is still needed to determine which needs and interests should be met given limited capacity and resources. As Anwar (2009) puts it, the ethics of care should be applied in conjunction with the

strengthening of regulation because regulatory failure has brought about corporate fraud, insider trading and other unethical business conduct.

## **7.6 Research limitations**

The analysis of corporate governance practices from the feminist ethics of care perspective in this thesis was conducted based on the publicly available information in BHP Billiton's Annual and Sustainability Reports and other information provided in the popular press. The reliance on secondary sources was deemed sufficient in this exploratory study to investigate the corporate governance practices from information disclosed by a large company with global operations. Further research to extend this study would include primary data from in-depth interviews, questionnaires or direct observations of sample companies to complement the content analysis method undertaken for this project.

The financial planning model developed in this thesis using the linear programming optimisation approach followed a deterministic approach assuming that the future financial condition can be predicted with a certain degree of accuracy. In reality, the dynamics of the business processes and operations contain a degree of uncertainty that might not be captured in the proposed model. A more dynamic model is required to reflect that reality with more accuracy.

It should also be noted that the financial planning model developed in this thesis was designed as a starting point to prompt further discussion and contemplation. There is still much work to do to translate the principles of the ethics of care into the financial management strategies of a company.

The analysis performed in this thesis was based on an in-depth case study of BHP Billiton. This was appropriate for this study, because the optimisation model could be applied with data extracted from reports across different years. The main focus was on exploring the application of the linear programming method. Moreover, focusing on one company provided a deep and thorough understanding of how the ethics of care affects company operations. Although generalisability is not the main purpose of this research,

its application to other companies could be done in future research to gain an understanding of the corporate governance practices from the feminist ethics of care perspective. The value and significance of this research will be greatly enhanced when further research is undertaken to test its applicability to other organisations and to make any necessary further modifications.

Further research could also apply the same kind of analysis in a second sample company, publicly known for its ethics of justice rather than ethics of care application. This analysis would create some basis for comparison of different corporate governance practices, as well as the impact of various financial management strategies.

The results of the analysis of corporate governance practices suggest that several inconsistencies with the ethics of care principles might be due to the large organisational size of BHP Billiton. With multi-national operations, a large corporation might not be suitable as a caring organisation. According to Iannello (1992), the organisation must remain small enough for the collective, as a group, to participate together in strategic decision making. A future study with an interdisciplinary approach that spans the field of ethics, organisational theory, accounting and finance would be worth undertaking to answer questions relating to organisational size.

Last but not least, the complementarity of the ethics of care and the ethics of justice has been stated several times in this thesis. However, the issue of how we set the boundaries of care has not been discussed and needs a more in-depth analysis in future research. Without the effort to make this clear, it will be difficult to make an operationally meaningful translation of the ethics of care to the competitive business environment. Several questions need to be answered. For instance, do we need to care about competitors? Do all customers or employees have an equal claim on a company's care-giving resources? One suggestion from Liedtka (2009) still needs thorough thought and empirical research. The author writes: 'the business organization, conceived of as a "community of mutual care," would have a responsibility to care for those in proximity to them who have needs that they are especially well-suited, by their capability base, to

fulfil, where giving such care does not act against their own needs. Such care should be growth-enhancing for its recipients.’ (p. 196).

Despite the research limitations identified above, this study provides important and significant academic and practical contributions. In the academic field, this thesis contributes to knowledge by showing the possibility of using feminist ethics of care as a different perspective to analyse the corporate governance practices, which have only been explored in a small amount of previous research.

The different perspective using the ethics of care is expected to contribute solutions to corporate governance failure, which has been at the core of many problems during financial crises and several corporate scandals and collapses. Louder calls for increased regulation have emanated from many governments as a result. The caring and stakeholder-driven approach to governance, as suggested by the ethics of care, can complement the legislative approach by providing an ethical and principles-based approach. This would promote a more values-based rather than just a compliance culture to improve governance and risk management throughout the organisation.

This study also contributes to filling the knowledge gap in the financial planning model literature by providing financial management strategies and a financial planning model using the feminist ethics of care principles. At the practical level, the model developed in this thesis can serve as a basis for use by corporations in devising their financial management strategies and inserting ethical considerations in developing those strategies.

## GLOSSARY

**Business ethics:** A form of applied ethics or professional ethics that examines ethical principles and moral or ethical problems that arise in a business environment. It applies to all aspects of business conduct and is relevant to the conduct of individuals and entire organisations.

**Constraints in optimisation problem:** Equality (equation) or inequality functions that represent limited resources, such as time and funds.

**Content analysis:** A research method used to systematically evaluate the symbolic contents of all forms of recorded communication. It can be used to analyse texts (or other meaningful matter) in the contexts of their uses with the purpose of providing knowledge, new insights, a representation of facts and a practical guide to action.

**Corporate governance:** The system of rules, practices and processes by which a company is managed, monitored and held accountable. Corporate governance essentially involves balancing the interests of the many stakeholders in a company - these include its shareholders, management, customers, suppliers, financiers, government, environment and the community.

**Corporate Social Responsibility (CSR):** Corporate initiatives to assess and take responsibility for the company's effects on the environment and impact on social welfare. The term generally applies to company efforts that go beyond what may be required by regulators or environmental protection groups.

**Corporate sustainability activities:** Activities performed in companies that enable decisions to be made in order to simultaneously improve the economy, the community and the environment. A form of sustainability activities in a company is known as the CSR.

**Decisions or variables in optimisation problem:** A set of decisions or variables to be made or achieved. The decisions are often represented by the symbols  $X_1, X_2, \dots, X_n$ .

**Ethics of care:** A normative ethical theory about what makes actions morally right or wrong. It is one of a cluster of normative ethical theories that were developed by feminists in the twentieth century (including Gilligan in 1982). It emphasises the self as connected to others and is represented as a web of relationships and responsibilities.

**Ethics of justice:** Moral choices through a measure of rights of the people involved. It defines the self as separate and uses rights to protect boundaries between the self and other.

**Feminist research:** Research that is connected primarily in principle to the feminist struggle by documenting women's lives, experiences and concerns. No single method, methodology or epistemology informs feminist research as various perspectives, a wide range of methods and methodologies and multiple lenses can be applied on the research question(s) and objective(s).

**Financial modelling:** The process by which a firm constructs a financial representation of some, or all, aspects of the firm or given security. The model is usually characterised by performing calculations, and makes recommendations based on that information.

**Legitimacy theory:** A theory that posits that businesses are bound by the social contract in which the firms agree to perform various socially desired actions in return for approval of firms' objectives and other rewards, and this ultimately guarantees their continued existence.

**Linear programming:** One type of optimisation model where the general form is formulated in a linear manner.

**Mixed-methods:** A research method that focuses on collecting, analysing and mixing both quantitative and qualitative data in a single study or series of studies to provide a better understanding of research problems than a single approach alone.

**Objective(s) in optimisation problem:** Goal(s) to be considered by the decision maker to decide which course of action is the best.

**Optimisation method:** Mathematical programming approach to find the best possible solution (the optimal or most efficient way) of using limited resources to achieve certain defined objectives.

**Pro forma financial statement:** Projected or estimated financial statement that attempts to present a reasonably accurate idea of what a firm's financial situation would be if the present trends continue or certain assumptions hold true.

**Qualitative analysis:** Research techniques that emphasise the processes and meanings that are not examined or measured in terms of quantity, amount, intensity or frequency.

**Sensitivity analysis:** The study of how the uncertainty in the output of a mathematical model or system (numerical or otherwise) can be apportioned to different sources of uncertainty in its inputs.

**Stakeholder engagement:** A key part of CSR and achieving the triple bottom line. Companies engage their stakeholders in dialogues to find out what social and environmental issues matter most to them in order to improve decision making and accountability.

**Stakeholder theory:** A theory that suggests that the purpose of a business is to create as much value as possible for stakeholders. In order to succeed and be sustainable over time, management must keep the interests of customers, suppliers, employees, communities and shareholders aligned and balanced.

**Sustainability accounting and reporting:** An accounting tool to communicate a company's social and environmental performance to its internal and external stakeholders.

## REFERENCES

- Act Now! n.d, *Ok Tedi mine*, viewed 16 May 2013, <<http://actnowpng.org/content/ok-tedi-mine>>.
- Alam, M 2006, "Stakeholder theory", in Z Hoque (ed.), *Methodological issues in accounting research : theories, methods and issues*, Spiramus, London, pp. 207-19.
- Anwar, GJ 2009, 'The U.S financial crisis from 2007: are there regulatory and governance failure?', *Journal of Business and Policy Research*, vol. 4, no. 1, pp. 25-49.
- ASX, CGC 2007, *Corporate governance principles and recommendations with 2010 amendments*, Australia Stock Exchange, Sydney.
- Australian Conservation Foundation 2009, *BHP's Olympic Dam dilemma: fuel nuclear risks as a uranium quarry or trade as a copper mine?* viewed 17 May 2013, <http://www.acfonline.org.au/news-media/media-release/bhp%E2%80%99s-olympic-dam-dilemma-fuel-nuclear-risks-uranium-quarry-or-trade-copper>
- Bampton, R & Maclagan, P 2009, 'Does a care orientation explain gender differences in ethical decision making? A critical analysis and fresh findings', *Business Ethics: A European Review*, vol. 18, no. 2, pp. 179-91.
- Banks, E 2004, *Corporate governance, financial responsibility, controls and ethics*, Palgrave, New York.
- Batson, RG 1989, 'Financial planning using goal programming', *Long Range Planning*, vol. 22, no. 5, pp. 112-20.
- Bay, D 2002, 'A critical evaluation of the use of the DIT in accounting ethics research', *Critical Perspectives on Accounting*, vol. 13, no. 2, pp. 159-77.
- Benschop, Y & Meihuizen, HE 2002, 'Keeping up gendered appearances: representations of gender in financial annual reports', *Accounting, Organizations and Society*, vol. 27, no. 7, pp. 611-36.
- Bergman, MM 2010, 'Hermeneutic content analysis: textual and audio-visual analyses within a mixed methods framework', in A Tashakkori & C Teddlie (eds), *Mixed Methods in Social & Behavioral Research*, Sage Publications, California, pp. 379-96.

- Berle, A & Means, G 1932, *The modern corporation and private property*, Transaction Publishers (1991 printed edition), New Brunswick.
- BHP Billiton 2011, *Olympic Dam Expansion Supplementary Environmental Impact Statement 2011*, Melbourne, viewed 22 November 2013, <http://www.bhpbilliton.com/home/aboutus/regulatory/Documents/Olympic%20Dam%20Supplementary%20EIS/Documents/Chapter%2025%20Health%20and%20Safety.pdf>
- BHP Billiton Watch 2011, *BHP Billiton dirty energy*, viewed 16 May 2013, [http://bhpbillitonwatch.files.wordpress.com/2011/11/bhpb\\_report\\_sml.pdf](http://bhpbillitonwatch.files.wordpress.com/2011/11/bhpb_report_sml.pdf)
- Bird, R, Hall, AD, Momentè, F & Reggiani, F 2007, 'What corporate social responsibility activities are valued by the market?', *Journal of Business Ethics*, vol. 76, no. 2, pp. 189-206.
- Blaikie, N 2007, *Approaches to social enquiry*, 2<sup>nd</sup> edn, Polity, Cambridge.
- Blum, LA 1993, 'Gilligan and Kohlberg: implications for moral theory', in MJ Larrabee (ed.), *An ethic of care: feminist and interdisciplinary perspectives*, Routledge, London, pp. 49-68.
- Brabeck, M 1993, 'Moral judgement: theory and research on differences between males and females', in M Larrabee (ed.), *An ethic of care: feminist and interdisciplinary perspectives*, Routledge, New York, pp. 33-48.
- Brealey, R, Myers, S, Partington, G & Robinson, D 2000, *Principles of corporate finance*, McGraw-Hill, Roseville NSW.
- Brennan, L, Binney, W, McCrohan, J & Lancaster, N 2011, 'Implementation of environmental sustainability in business: Suggestions for improvement', *Australasian Marketing Journal (AMJ)*, vol. 19, no. 1, pp. 52-7.
- Browne, J & Nuttall, R 2013, *Beyond corporate social responsibility: integrated external engagement*, viewed 19 May 2013, [http://www.mckinsey.com/insights/strategy/beyond\\_corporate\\_social\\_responsibility\\_integrated\\_external\\_engagement](http://www.mckinsey.com/insights/strategy/beyond_corporate_social_responsibility_integrated_external_engagement) .
- Buhr, N 2007, 'Histories of and rationales for sustainability reporting', in J Unerman, J Bebbington & B O'Dwyer (eds), *Sustainability accounting and accountability*, Routledge, New York.

- Burton, BK & Dunn, CP 1996, 'Feminist ethics as moral grounding for stakeholder theory', *Business Ethics Quarterly*, vol. 6, no. 2, pp. 133-47.
- Campbell, R & Schram, PJ 1995, 'Feminist research methods: A content analysis of psychology and social science textbooks', *Psychology of Women Quarterly*, vol. 19, no. 1, pp. 85-106.
- Cariño, DR & Ziemba, WT 1998, 'Formulation of the Russell-Yasuda Kasai financial planning model', *Operations Research*, vol. 46, no. 4, pp. 433-49.
- Carleton, WT 1970, 'An analytical model for long-range financial planning', *The Journal of Finance*, vol. 25, no. 2, pp. 291-315.
- Carleton, WT, Dick, CL, Jr. & Downes, DH 1973, 'Financial policy models: theory and practice', *The Journal of Financial and Quantitative Analysis*, vol. 8, no. 5, pp. 691-709.
- Carroll, AB 1979, 'A three-dimensional conceptual model of corporate performance', *The Academy of Management Review*, vol. 4, no. 4, pp. 497-505.
- Carter, NM & Wagner, HM 2011, *The Bottom Line: Corporate Performance and Women's Representation on Boards (2004–2008)*, Catalyst, New York.
- Cascio, WF 1991, *Costing human resources*, South-Western Educational Publishing, Boston.
- Cassell, C & Symon, G 1994, 'Qualitative research in work contexts', in C Cassell & G Symon (eds), *Qualitative Methods in Organizational Research: A Practical Guide*, Sage Publications, London, pp. 1-13.
- Castka, P, Sharp, JM, Bamber, CJ & Bamber, DJ 2004, 'Integrating corporate social responsibility (CSR) into ISO management systems--in search of a feasible CSR management system framework', *The TQM Magazine*, vol. 16, no. 3, pp. 216-24.
- Clarke, F, Dean, G & Oliver, K 2003, *Corporate collapse: accounting, regulatory and ethical failure*, 2<sup>nd</sup> edn, Cambridge University Press, Melbourne
- Clarke, T 1998, 'The stakeholder corporation: a business philosophy for the information age', *Long Range Planning*, vol. 31, no. 2, pp. 182-94.
- 2010, 'Recurring crises in Anglo-American corporate governance', *Contributions to Political Economy*, vol. 1, pp. 1-24.

- Clarkson, MBE 1995, 'A stakeholder framework for analyzing and evaluating corporate social performance', *The Academy of Management Review*, vol. 20, no. 1, pp. 92-117.
- Clegg, B 2011, *Financial times briefing on sustainable business*, Prentice Hall, London.
- Coase, RH 1937, 'The nature of the firm', *Economica*, vol. 4, no. 16, pp. 386-405.
- Colby, A & Damon, W 1983, 'Listening to a different voice: a review of Gilligan's "In a different voice".' *Merrill-Palmer Quarterly (1982-)*, vol. 29, no. 4, pp. 473-481.
- Collins, PH 1990, *Black feminist thought: knowledge, consciousness, and the politics of empowerment*, Unwin Hyman, Boston.
- Collins, R 2009, *The drivers: The rising water marque*, Waste Management and Environment, viewed 2 December 2013, <http://search.informit.com.au/documentSummary;dn=674538860322253;res=IELENG>
- Collis, J & Hussey, R 2003, *Business research: a practical guide for undergraduate and postgraduate students*, 2<sup>nd</sup> edn, Palgrave Macmillan, Hampshire.
- Conari Press 1993, *Random acts of kindness*, Conari Pr, San Fransisco.
- Contrada, JD 2002, 'Enron debacle example of "agency problem" within boards of directors, say strategic-management researchers', viewed 20 January 2013, <http://www.buffalo.edu/news/releases/2002/01/5523.html>
- Crotty, M 1998, *The foundations of social research: meaning and perspective in the research process*, Allen & Unwin, St Leonards, NSW.
- Cunich, S 2008, *Farmers stand strong against BHP*, <http://www.greenleft.org.au/node/40391> .
- Dagge, J 2013, *BHP Billiton trims executive structure*, viewed 13 May 2013, <http://www.heraldsun.com.au/news/bhp-billiton-trims-executive-structure/story-e6frf7jo-1226623874795>
- Dallas, G 2004, 'Ownership structure and external influences', in G Dallas (ed.), *Governance and risk: an analytical handbook for investors, managers, directors, and stakeholders*, McGraw-Hill, New York, pp. 41-60.
- Deegan, C 2010, *Australian financial accounting*, 6<sup>th</sup> edn, McGraw-Hill, NSW Australia.

- Deegan, C, Rankin, M & Tobin, J 2002, 'An examination of the corporate social and environmental disclosures of BHP from 1983-1997: A test of legitimacy theory', *Accounting, Auditing & Accountability Journal*, vol. 15, no. 3, pp. 312-43.
- Denzin, NK & Lincoln, YS (eds.) 1998, *The landscape of qualitative research: theories and issues*, Sage Publications, California.
- Dobson, J & White, J 1995, 'Toward the feminine firm: An extension to Thomas White', *Business Ethics Quarterly*, vol. 5, no. 3, pp. 463-478.
- Doherty, B 2010, 'BHP's "tea money" missing in Cambodia', *The Sydney Morning Herald*, 15 May.
- Elkington, J & Zollinger, P 2004, 'Social and environmental reporting', in G Dallas (ed.), *Governance and risk: an analytical handbook for investors, managers, directors, and stakeholders*, McGraw-Hill, New York, pp. 200-14.
- Ernst & Young 2013, 'Trends in sustainability reporting', paper presented to The RMIT Accounting for Sustainability Conference, 2013, Melbourne, 3 June 2013.
- Eslinger, H 2013, *The Ok Tedi mine: copper and gold tailings Papua New Guinea*, viewed 16 May 2013, <http://www.uwec.edu/jolhm/EH/Eslinger/References.htm>
- Farrar, J 2001, *Corporate governance in Australia and New Zealand*, Oxford University Press, Melbourne.
- Fisher, JEA 2001, 'The 'ethic of care': its promise and its problem', PhD thesis, The University of British Columbia.
- Fitzgerald, B & Murphy, M 2010, *BHP pledges investigation on bribery scandal in Cambodia*, viewed 13 May 2013, <http://khmerization.blogspot.com.au/2010/04/bhp-pledges-investigation-on-bribery.html> .
- Folbre, N 1995, '"Holding hands at midnight": The paradox of caring labor', *Feminist Economics*, vol. 1, no. 1, pp. 73-92.
- Francis, J & Rowell, D 1978, 'A simultaneous-equation model of the firm for financial analysis and planning', *Financial Management*, vol, 7, no.1, pp. 29-44.
- Francis, R & Armstrong, A 2003, 'Ethics as a risk management strategy: The Australian experience', *Journal of Business Ethics*, vol. 45, no. 4, pp. 375-85.
- Francis, R 2000, *Ethics & corporate governance: an Australian handbook*, University of New South Wales Press, Sydney.

- Freeman, ER 1984, *Strategic management: A stakeholder approach*, Pitman, Massachusetts.
- Freeman, ER & Velamuri, SR 2008, 'A new approach to CSR: company stakeholder responsibility', viewed 12 May 2011, <http://ssrn.com/abstract=1186223> or <http://dx.doi.org/10.2139/ssrn.1186223>
- French, W & Weis, A 2000, 'An ethics of care or an ethics of justice', *Journal of Business Ethics*, vol. 27, pp. 125-36.
- Gaffikin, M 2008, *Accounting theory, research, regulation and accounting practice*, Pearson, New South Wales.
- Gilligan, C 1982, *In a different voice, psychological theory and women's development*, Harvard University Press, Cambridge.
- 1993, 'Reply to critics', in MJ Larrabee (ed.), *An ethic of care*, Routledge, London, pp. 207-14.
- Global Reporting Initiative 2013, *G4 Sustainability Reporting Guidelines: Reporting Principles and Standard Disclosures*, viewed 20 June 2013, <https://www.globalreporting.org/resource/library/GRIG4-Part1-Reporting-Principles-and-Standard-Disclosures.pdf>
- Godfrey, PC 2005, 'The Relationship between corporate philanthropy and shareholder wealth: a risk management perspective', *The Academy of Management Review*, vol. 30, no. 4, pp. 777-98.
- Goldberg, L 1965, *An inquiry into the nature of accounting*, American Accounting Association Monograph No. 7, George Banta, Wisconsin.
- Graneheim, UH & Lundman, B 2004, 'Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness', *Nurse Education Today*, vol. 24, no. 2, pp. 105-12.
- Gray, R, Owen, D & Adams, C 1996, *Accounting and accountability: changes and challenges in corporate social and environmental reporting*, Prentice Hall, London.
- Grosser, K & Moon, J 2008, 'Developments in company reporting on workplace gender equality? A corporate social responsibility perspective', *Accounting Forum*, vol. 32, no. 3, pp. 179-98.

- Grosser, K 2009, 'Corporate social responsibility and gender equality: women as stakeholders and the European Union sustainability strategy', *Business Ethics: A European Review*, vol. 18, no. 3, pp. 290-307.
- Gustafson, PE 1998, 'Gender differences in risk perception: theoretical and methodological perspectives', *Risk Analysis*, vol. 18, no. 6, pp. 805-11.
- Guthrie, J & Parker, LD 1989, 'Corporate social reporting: a rebuttal of legitimacy theory', *Accounting and Business Research*, vol. 19, no. 76, pp. 343-52.
- Habermas, J 1987, *Knowledge and human interests*, Polity, Cambridge.
- Haigh, N & Griffiths, A 2009, 'The natural environment as a primary stakeholder: The case of climate change', *Business Strategy and the Environment*, vol. 18, no. 6, pp. 347-59.
- Hammond, T & Oakes, LS 1992, 'Some feminisms and their implications for accounting practice', *Accounting, Auditing & Accountability Journal*, vol. 5, no. 3 pp. 52-70.
- Harding, S 1987, 'Introduction: is there a feminist method?' in S Harding (ed.), *Feminism and Methodology*, Indiana University Press, Bloomington, pp. 1-14.
- Held, V 1993, *Feminist Morality: Transforming Culture, Society, And Politics*, The University of Chicago, Chicago.
- Hesse-Biber, SN & Leavy, P 2011, *The practice of qualitative research*, 2<sup>nd</sup> edn, Sage Publications, California.
- Hitchcock, D & Willard, M 2009, *The business guide to sustainability: practical strategies and tools for organizations*, 2<sup>nd</sup> edn, Earthscan, London.
- Ho, TSY & Lee, SB 2004, *The Oxford guide to financial modeling: Applications for capital markets, corporate finance, risk management, and financial institutions*, Oxford University Press, New York.
- Hopwood, A 1974, *Accounting and human behaviour*, Haymarket Publishing Limited, London.
- Hsieh, H-F & Shannon, SE 2005, 'Three approaches to qualitative content analysis', *Qualitative health research*, vol. 15, no. 9, pp. 1277-88.
- Hunter, WC 2002, 'Recent global financial crises: lessons learned', in JA Batten & TA Fetherston (eds.), *Research in international business and finance: Financial risk and financial risk management*, Elsevier Science, Oxford, vol. 16.

- Iannello, KP 1992, *Decisions without hierarchy: Feminist interventions in organization theory and practice*, Psychology Press, London.
- Ijiri, Y, Levy, FK & Lyon, RC 1963, 'A linear programming model for budgeting and financial planning', *Journal of Accounting Research*, vol. 1, no. 2, pp. 198-212.
- Jenkins, H 2004, 'Corporate social responsibility and the mining industry: conflicts and constructs', *Corporate Social Responsibility and Environmental Management*, vol. 11, no. 1, pp. 23-34.
- Jensen, MC & Meckling, WH 1976, 'Theory of the firm: managerial behavior, agency costs and ownership structure', *Journal of Financial Economics*, vol. 3, no. 4, pp. 305-60.
- Kent, P & Monem, R 2008, 'What drives TBL reporting: Good governance or threat to legitimacy?' *Australian Accounting Review*, vol. 18, no. 4, pp. 297-309.
- Kirk, J & Miller, ML 1986, *Reliability and validity in qualitative research*, Sage Publications, California.
- Kohlbacher, F 2006, 'The use of qualitative content analysis in case study research', *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, vol. 7, no. 1, pp. 1-23.
- Krippendorff, K 2004, *Content analysis: an introduction to its methodology*, 2<sup>nd</sup> edn, Sage Publications, California.
- Kvanli, AH 1980, 'Financial planning using goal programming', *Omega*, vol. 8, no. 2, pp. 207-18.
- Kytle, B & Ruggie, JG 2005, 'Corporate social responsibility as risk management: a model for multinationals', *A working paper of the Corporate Social Responsibility Initiative*, vol. 10, pp. 1-13.
- La Porta, R, Lopez-de-Silanes, F, Shleifer, A & Vishny, R 2000, 'Investor protection and corporate governance', *Journal of Financial Economics*, vol. 58, no. 1-2, pp. 3-27.
- Lamberton, G 2000, 'Accounting for sustainable development—A case study of city farm', *Critical Perspectives on Accounting*, vol. 11, no. 5, pp. 583-605.
- Leavy, PL 2007, 'The feminist practice of content analysis', in SN Hesse-Biber & PL Leavy (eds.), *Feminist Research Practice: A Primer*, Sage Publications, California, pp. 223-48.

- Leckenby, D & Hesse-Biber, SN 2007, 'Feminist approaches to mixed-methods research', in SN Hesse-Biber (ed.), *Feminist Research Practice: A Primer*, Sage Publications, California, pp. 249-91.
- Lee, AC, Lee, JC & Lee, CF 2009, *Financial analysis, planning and forecasting: theory and application*, 2<sup>nd</sup> edn, World Scientific, Singapore.
- Liedtka, JM 2009, 'Feminist Morality and Competitive Reality', *Business Ethics Quarterly*, vol. 6, no. 2, pp. 179-200.
- Lincoln, Y & Guba, E 1985, *Naturalistic inquiry*, Sage, California.
- Lingane, A & Olsen, S 2004, 'Guidelines for social return on investment', *California Management Review*, vol. 46, no. 3, pp. 116-35.
- London Mining Network 2012, *Killing me softly with his song: inside another BHP Billiton AGM*, viewed 17 April 2013, <http://londonminingnetwork.org/2012/10/killing-me-softly-with-his-song-inside-another-bhp-billiton-agm/>
- Machold, S, Ahmed, P & Farquhar, S 2008, 'Corporate governance and ethics: a feminist perspective', *Journal of Business Ethics*, vol. 81, no. 3, pp. 665-78.
- Malone, D & Roberts, RW 1996, 'Public interest reports as a medium for corporate disclosure: the case of General Motors', *Journal of Business Ethics*, vol. 15, no. 7, pp. 759-71.
- Mason, C & Simmons, J 2014, 'Embedding corporate social responsibility in corporate governance: a stakeholder systems approach', *Journal of Business Ethics*, vol. 119, no. 1, pp. 77-86.
- Mayes, R & Pini, B 2010, 'The 'feminine revolution in mining': a critique', *Australian Geographer*, vol. 41, no. 2, pp. 233-45.
- Mercer 2013, *The financial cost of staff turnover*, <http://www.browniepoints.com.au/blog/the-cost-of-staff-turnover-2/>
- McWilliams, A & Siegel, D 2000, 'Corporate social responsibility and financial performance: correlation or misspecification?' *Strategic Management Journal*, vol. 21, no. 5, pp. 603-9.
- 2001, 'Corporate social responsibility: A theory of the firm perspective', *The Academy of Management Review*, vol. 26, no. 1, pp. 117-27.
- Mining Australia 2004, *Caring for the environment?*, viewed 18 May 2013, [http://oj.hss.uts.edu.au/oj1/oj1\\_s2004/BHPBillitonandPR/EnvironmentalPR.htm](http://oj.hss.uts.edu.au/oj1/oj1_s2004/BHPBillitonandPR/EnvironmentalPR.htm)

- Mining.com 2012, *Carrejon postpones study on diverting Columbia's Rancheria river due to weak carbon prices*, viewed 17 April 2012, <http://www.mining.com/web/carrejon-postpones-study-on-diverting-columbias-rancheria-river-due-to-weak-carbon-prices/> .
- Mulvey, JM & Shetty, B 2004, 'Financial planning via multi-stage stochastic optimization', *Computers & Operations Research*, vol. 31, no. 1, pp. 1-20.
- Myers, SC & Pogue, GA 1974, 'A programming approach to corporate financial management', *The Journal of Finance*, vol. 29, no. 2, pp. 579-99.
- Naylor, TH & Schauland, H 1976, 'A survey of users of corporate planning models', *Management Science*, vol. 22, no. 9, pp. 927-37.
- Neimark, MK 1992, *The hidden dimensions of annual reports: sixty years of social conflict at General Motors*, Markus Wiener Publishing, Inc., New York.
- Nelson, T & Levesque, LL 2007, 'The Status of Women in Corporate Governance in High-Growth, High-Potential Firms', *Entrepreneurship Theory and Practice*, vol. 31, no. 2, pp. 209-32.
- Noddings, NP 1984, *Caring: A Feminine Approach to Ethics and Moral Education*, University of California, California.
- Noonan, D 2010, *South Australia: Olympic Dam mine*, viewed 16 May 2013, <http://bhpbillitonwatch.net/2010/11/18/south-australia-olympic-dam-mine-2/>
- O'Fallon, MJ & Butterfield, KD 2005, 'A review of the empirical ethical decision-making literature: 1996-2003', *Journal of Business Ethics*, vol. 59, no. 4, pp. 375-413.
- O'Connor, MA 2005, 'Corporate social responsibility for work/family balance', *St. John's Law Review*, vol. 79, no. 4, pp. 1193-220.
- O'Donovan, G 2000, 'Legitimacy theory as an explanation for corporate environmental disclosures', PhD thesis, Victoria University of Technology.
- Palmer, DE & Stoll, ML 2011, 'Moving toward a more caring stakeholder theory: global business ethics in dialogue with the feminist ethics of care', in *Applying Care Ethics to Business*, ed. Maurice Harnington, Springer, Colorado, pp. 111-26.
- Phillips, R 2003, *Stakeholder theory and organizational ethics*, Berret-Koehler, San Fransisco.

- Powell, M & Ansic, D 1997, 'Gender differences in risk behaviour in financial decision-making: An experimental analysis', *Journal of Economic Psychology*, vol. 18, pp. 605-28.
- Ragsdale, CT 2001, *Spreadsheet modeling and decision analysis*, 3<sup>rd</sup> edn, Thomson South Western, Ohio.
- Reinharz, S 1992, *Feminist methods in social research*, Oxford University Press, New York.
- Reiter, S 1997, 'The ethics of care and new paradigms for accounting practice', *Accounting, Auditing & Accountability Journal*, vol. 10, no. 3, pp. 299-324.
- Reiter, S 1996, 'The Kohlberg-Gilligan controversy: lessons for accounting ethics education', *Critical Perspectives on Accounting*, vol. 7, no. 1, pp. 33-54.
- Rezaee, Z 2009, *Corporate governance and ethics*, John Wiley & Sons, New Jersey.
- Rivas, C 2012, 'Coding and analysing qualitative data', in C Seale (ed.), *Researching Society and Culture*, 3<sup>rd</sup> edn, Sage Publications, London, pp. 366-92.
- Roberts, J 2001, 'Corporate governance and the ethics of Narcissus', *Business Ethics Quarterly*, vol. 11, no. 1, pp. 109-27.
- Rosenblum, D, 2009, 'Feminizing Capital: A Corporate Imperative', *Berkeley Business Law Journal*, vol. 6, no. 1, pp. 55-95.
- Roslender, R 2006, 'Critical theory', in Z Hoque (ed.), *Methodological issues in accounting research: theories and methods*, Spiramus, London, pp. 247-67.
- Rotheroe, N & Richards, A 2007, 'Social return on investment and social enterprise: transparent accountability for sustainable development', *Social Enterprise Journal*, vol. 3, no. 1, pp. 31-48.
- Rubenstein, DB 1994, *Environmental accounting for the sustainable corporation: strategies and techniques*, Quorum, Connecticut, USA.
- Sarra, J 2002, 'The gender implications of corporate governance change', *Seattle Journal for Social Justice*, vol. 1, no. 2, pp. 457-502.
- Seale, C 2012, 'Validity, reliability and the quality of research', in C Seale (ed.), *Researching Society and Culture*, 3<sup>rd</sup> edn, Sage Publications London, pp. 528-43.

- Sharp, B 2007, 'Ok Tedi case study: "If this were your village...?"', paper presented to IAP2 Australasian Symposium, 6 September 2007, <<http://www.iap2.org.au/sitebuilder/resources/knowledge/files/166/sharpbarbara.pdf>>
- Shim, JK & McGlade, R 1984, 'The use of corporate planning models: past, present and future', *Journal of the Operational Research Society*, vol. 35, no. 10, pp. 885-93.
- Simola, S 2003, 'Ethics of justice and care in corporate crisis management', *Journal of Business Ethics*, vol. 46, no. 4, pp. 351-61.
- 2005, 'Concepts of care in organizational crisis prevention', *Journal of Business Ethics*, vol. 62, no. 4, pp. 341-53.
- Smith, M 1999, 'Personality issues and theory impact on accounting and auditing', *Managerial Auditing Journal*, vol. 14, no. 9, pp. 453-60.
- Stahl, MJ & Grigsby, DW 1997, *Strategic management: total quality and global competition*, Blackwell, Cambridge.
- Stedham, Y, Yamamura, JH & Beekun, RI 2007, 'Gender differences in business ethics: justice and relativist perspectives', *Business Ethics: A European Review*, vol. 16, no. 2, pp. 163-74.
- Taylor, R 1998, 'The ethic of care versus the ethic of justice: an economic analysis', *Journal of Socio-Economics*, vol. 27, no. 4, p. 479-493.
- The Centre for Media and Democracy 2012, *BHP Billiton*, viewed 6 May 2013, [http://www.sourcewatch.org/index.php/BHP\\_Billiton](http://www.sourcewatch.org/index.php/BHP_Billiton) .
- The Climate Institute 2009, *Climate Institute policy brief: The business council of Australia's missing millions*, viewed 1 December 2013, [http://www.climateinstitute.org.au/verve/resources/bca\\_missing\\_millions\\_report.pdf](http://www.climateinstitute.org.au/verve/resources/bca_missing_millions_report.pdf)
- The Sydney Morning Herald 2011, *Strike contagion hits global miners*, viewed 7 May 2013, <http://www.smh.com.au/business/strike-contagion-hits-global-miners-20110726-1hxvk.html>
- Thompson, P & Macklin, R 2009, *The big fella: the rise and rise of BHP Billiton*, William Heinemann, Sydney NSW.
- Tinker, T & Neimark, M 1987, 'The role of annual reports in gender and class contradictions at General Motors: 1917-1976', *Accounting, Organizations and Society*, vol. 12, no. 1, pp. 71-88.

- Tong, R 2009, *Feminist thought: a more comprehensive introduction*, 3<sup>rd</sup> edn, Westview Press, Colorado, USA.
- Trading Economics 2013, *Australia interest rate*, viewed 2 December 2013, <http://www.tradingeconomics.com/australia/interest-rate>
- Ullmann, AA 1985, 'Data in search of a theory: A critical examination of the relationships among social performance, social disclosure, and economic performance of U. S. firms', *The Academy of Management Review*, vol. 10, no. 3, pp. 540-57.
- Veasey, EN 2003, 'Corporate governance and ethics in the post-Enron WorldCom environment', *Wake Forest L. Rev.*, vol. 38, pp. 839-854.
- Velasquez, MG 1998, *Business ethics: concepts and cases*, 4<sup>th</sup> edn, Prentice-Hall, New Jersey.
- Visser, W 2010, 'CSR 2.0: the evolution and revolution of corporate social responsibility', in M Pohl & N Tolhurst (eds.), *Responsible business: how to manage a CSR strategy successfully*, John Wiley & Sons, West Sussex, pp. 311-28.
- Voice of America 2013, *Government Denies Reports on Mining Corruption and Hun Sen* viewed 20 May 2013, <http://www.voacambodia.com/content/government-denies-reports-on-mining-corruption-and-hun-sen/1630623.html>
- Warren, JM & Shelton, JP 1971, 'A simultaneous equation approach to financial planning', *The Journal of Finance*, vol. 26, no. 5, pp. 1123-42.
- Weber, M 2008, 'The business case for corporate social responsibility: A company-level measurement approach for CSR', *European Management Journal*, vol. 26, no. 4, pp. 247-61.
- Weber, RP 1990, *Basic content analysis*, 2<sup>nd</sup> edn, Sage Publications, California.
- White, MD & Marsh, EE 2006, 'Content analysis: A flexible methodology', *Library trends*, vol. 55, no. 1, pp. 22-45.
- Wicks, AC 1996, 'Reflections on the Practical Relevance of Feminist Thought to Business', *Business Ethics Quarterly*, vol. 6, no. 4, pp. 523-31.
- Wicks, AC, Gilbert, DR, Jr. & Freeman, RE 1994, 'A feminist reinterpretation of the stakeholder concept', *Business Ethics Quarterly*, vol. 4, no. 4, pp. 475-97.

- Williams, RJ 2003, 'Women on corporate boards of directors and their influence on corporate philanthropy', *Journal of Business Ethics*, vol. 42, no. 1, pp. 1-10.
- Wood, T & Carter, L 2013, *Getting gas right: Australia energy challenge*, Grattan Institute, viewed 1 December 2013, [http://grattan.edu.au/static/files/assets/ba24a4e0/189\\_getting\\_gas\\_right\\_report.pdf](http://grattan.edu.au/static/files/assets/ba24a4e0/189_getting_gas_right_report.pdf)
- Yong, L 2009, *Lessons in corporate governance from the global financial crisis*, CCH Australia, Sydney.

## APPENDIX 1 SOLUTION OF THE LINEAR PROGRAMMING MODEL USING THE PREMIUM SOLVER EXCEL

Microsoft Excel 14.0 Answer Report

Worksheet: [Qn Solver.xlsx]FRE FLP

Report Created: 1/21/2014 7:49:27 PM

**Result: Solver found a solution. All constraints and optimality conditions are satisfied.**

Engine: Standard LP/Quadratic

Solution Time: 00 Seconds

Iterations: 0

Subproblems: 0

Incumbent Solutions: 0

### Objective Cell (Max)

Cell	Name	Original Value	Final Value
\$D\$3	Coefficient OBJECTIVE	545,842.00	40,121.72

### Decision Variable Cells

Cell	Name	Original Value	Final Value	Type
\$B\$2	Results (Amount) PSC 2012	0.00	29,643.00	Normal
\$C\$2	Results (Amount) PSC 2013	0.00	42,389.49	Normal
\$D\$2	Results (Amount) PSC 2014	0.00	60,616.97	Normal
\$E\$2	Results (Amount) PSC 2015	0.00	86,682.27	Normal
\$F\$2	Results (Amount) PSC 2016	0.00	123,955.64	Normal
\$G\$2	Results (Amount) EWB 2012	0.00	5,915.00	Normal
\$H\$2	Results (Amount) EWB 2013	0.00	6,376.37	Normal
\$I\$2	Results (Amount) EWB 2014	0.00	6,873.73	Normal
\$J\$2	Results (Amount) EWB 2015	0.00	7,409.88	Normal
\$K\$2	Results (Amount) EWB 2016	0.00	7,987.85	Normal
\$L\$2	Results (Amount) DIV 2012	0.00	6,181.00	Normal
\$M\$2	Results (Amount) DIV 2013	0.00	7,559.36	Normal
\$N\$2	Results (Amount) DIV 2014	0.00	9,245.10	Normal
\$O\$2	Results (Amount) DIV 2015	0.00	11,306.76	Normal
\$P\$2	Results (Amount) DIV 2016	0.00	13,828.17	Normal
\$Q\$2	Results (Amount) LTD 2012	0.00	25,541.27	Normal
\$R\$2	Results (Amount) LTD 2013	0.00	28,644.44	Normal
\$S\$2	Results (Amount) LTD 2014	0.00	32,124.60	Normal
\$T\$2	Results (Amount) LTD 2015	0.00	36,027.78	Normal
\$U\$2	Results (Amount) LTD 2016	0.00	40,405.56	Normal
\$V\$2	Results (Amount) PG 2012	0.00	9,195.26	Normal
\$W\$2	Results (Amount) PG 2013	0.00	10,312.40	Normal

\$X\$2	Results (Amount) PG 2014	0.00	11,564.76	Normal
\$Y\$2	Results (Amount) PG 2015	0.00	12,970.50	Normal
\$Z\$2	Results (Amount) PG 2016	0.00	14,545.70	Normal
\$AA\$2	Results (Amount) CC 2012	0.00	306.68	Normal
\$AB\$2	Results (Amount) CC 2013	0.00	343.81	Normal
\$AC\$2	Results (Amount) CC 2014	0.00	385.73	Normal
\$AD\$2	Results (Amount) CC 2015	0.00	432.38	Normal
\$AE\$2	Results (Amount) CC 2016	0.00	484.76	Normal
\$AF\$2	Results (Amount) ERE 2012	0.00	500.00	Normal
\$AG\$2	Results (Amount) ERE 2013	0.00	500.00	Normal
\$AH\$2	Results (Amount) ERE 2014	0.00	500.00	Normal
\$AI\$2	Results (Amount) ERE 2015	0.00	500.00	Normal
\$AJ\$2	Results (Amount) ERE 2016	0.00	500.00	Normal
\$AK\$2	Results (Amount) EC 2012	0.00	620.00	Normal
\$AL\$2	Results (Amount) EC 2013	0.00	611.32	Normal
\$AM\$2	Results (Amount) EC 2014	0.00	602.76	Normal
\$AN\$2	Results (Amount) EC 2015	0.00	594.32	Normal
\$AO\$2	Results (Amount) EC 2016	0.00	586.00	Normal
\$AP\$2	Results (Amount) EPE 2012	0.00	613.35	Normal
\$AQ\$2	Results (Amount) EPE 2013	0.00	687.63	Normal
\$AR\$2	Results (Amount) EPE 2014	0.00	771.45	Normal
\$AS\$2	Results (Amount) EPE 2015	0.00	864.77	Normal
\$AT\$2	Results (Amount) EPE 2016	0.00	969.51	Normal
\$AU\$2	Results (Amount) BLE 2012	0.00	4.40	Normal
\$AV\$2	Results (Amount) BLE 2013	0.00	4.40	Normal
\$AW\$2	Results (Amount) BLE 2014	0.00	4.40	Normal
\$AX\$2	Results (Amount) BLE 2015	0.00	4.40	Normal
\$AY\$2	Results (Amount) BLE 2016	0.00	4.40	Normal
\$AZ\$2	Results (Amount) ATP 2012	0.00	21,454.27	Normal
\$BA\$2	Results (Amount) ATP 2013	0.00	24,060.93	Normal
\$BB\$2	Results (Amount) ATP 2014	0.00	26,984.77	Normal
\$BC\$2	Results (Amount) ATP 2015	0.00	30,263.83	Normal
\$BD\$2	Results (Amount) ATP 2016	0.00	33,940.97	Normal
\$BE\$2	Results (Amount) InvFA2012	0.00	839.00	Normal
\$BF\$2	Results (Amount) InvFA2013	0.00	941.00	Normal
\$BG\$2	Results (Amount) InvFA2014	0.00	1,055.00	Normal
\$BH\$2	Results (Amount) InvFA2015	0.00	1,184.00	Normal
\$BI\$2	Results (Amount) InvFA2016	0.00	1,328.00	Normal
\$BJ\$2	Results (Amount) InvCA2012	0.00	82,162.00	Normal
\$BK\$2	Results (Amount) InvCA2013	0.00	98,594.40	Normal
\$BL\$2	Results (Amount) InvCA2014	0.00	118,313.28	Normal
\$BM\$2	Results (Amount) InvCA2015	0.00	141,975.94	Normal
\$BN\$2	Results (Amount) InvCA2016	0.00	170,371.12	Normal

\$BO\$2	Results (Amount) TF 2012	0.00	0.06	Normal
\$BP\$2	Results (Amount) TF 2013	0.00	0.07	Normal
\$BQ\$2	Results (Amount) TF 2014	0.00	0.08	Normal
\$BR\$2	Results (Amount) TF 2015	0.00	0.09	Normal
\$BS\$2	Results (Amount) TF 2016	0.00	0.10	Normal
\$BT\$2	Results (Amount) Prov 2012	0.00	9,079.00	Normal
\$BU\$2	Results (Amount) Prov 2013	0.00	10,350.06	Normal
\$BV\$2	Results (Amount) Prov 2014	0.00	11,799.07	Normal
\$BW\$2	Results (Amount) Prov 2015	0.00	13,450.94	Normal
\$BX\$2	Results (Amount) Prov 2016	0.00	15,334.07	Normal
\$BY\$2	Results (Amount) HSEC2012	0.00	50.00	Normal
\$BZ\$2	Results (Amount) HSEC2013	0.00	55.00	Normal
\$CA\$2	Results (Amount) HSEC2014	0.00	60.50	Normal
\$CB\$2	Results (Amount) HSEC2015	0.00	66.55	Normal
\$CC\$2	Results (Amount) HSEC2016	0.00	73.21	Normal
\$CD\$2	Results (Amount) Comm Exp 2012	0.00	251.00	Normal
\$CE\$2	Results (Amount) Comm Exp 2013	0.00	290.00	Normal
\$CF\$2	Results (Amount) Comm Exp 2014	0.00	334.00	Normal
\$CG\$2	Results (Amount) Comm Exp 2015	0.00	385.00	Normal
\$CH\$2	Results (Amount) Comm Exp 2016	0.00	444.00	Normal
\$CI\$2	Results (Amount) LitExp2012	0.00	712.00	Normal
\$CJ\$2	Results (Amount) LitExp2013	0.00	712.00	Normal
\$CK\$2	Results (Amount) LitExp2014	0.00	712.00	Normal
\$CL\$2	Results (Amount) LitExp2015	0.00	712.00	Normal
\$CM\$2	Results (Amount) LitExp2016	0.00	712.00	Normal
\$CN\$2	Results (Amount) FRE 2012	0.00	10.00	Normal
\$CO\$2	Results (Amount) FRE 2013	0.00	13.00	Normal
\$CP\$2	Results (Amount) FRE 2014	0.00	14.00	Normal
\$CQ\$2	Results (Amount) FRE 2015	0.00	17.00	Normal
\$CR\$2	Results (Amount) FRE 2016	0.00	19.00	Normal
\$CS\$2	Results (Amount) FLP 2012	0.00	5.06	Normal
\$CT\$2	Results (Amount) FLP 2013	0.00	6.28	Normal
\$CU\$2	Results (Amount) FLP 2014	0.00	7.24	Normal
\$CV\$2	Results (Amount) FLP 2015	0.00	8.35	Normal
\$CW\$2	Results (Amount) FLP 2016	0.00	9.63	Normal
\$CX\$2	Results (Amount) R&D2012	0.00	166.00	Normal
\$CY\$2	Results (Amount) R&D2013	0.00	206.00	Normal
\$CZ\$2	Results (Amount) R&D2014	0.00	238.00	Normal
\$DA\$2	Results (Amount) R&D2015	0.00	274.00	Normal
\$DB\$2	Results (Amount) R&D2016	0.00	316.00	Normal
\$DC\$2	Results (Amount) WLB2012	0.00	59.15	Normal
\$DD\$2	Results (Amount) WLB2013	0.00	63.76	Normal
\$DE\$2	Results (Amount) WLB2014	0.00	68.74	Normal

\$DF\$2	Results (Amount) WLB2015	0.00	74.10	Normal
\$DG\$2	Results (Amount) WLB2016	0.00	79.88	Normal
\$DH\$2	Results (Amount) CTO2012	0.00	280.00	Normal
\$DI\$2	Results (Amount) CTO2013	0.00	268.00	Normal
\$DJ\$2	Results (Amount) CTO2014	0.00	257.00	Normal
\$DK\$2	Results (Amount) CTO2015	0.00	244.00	Normal
\$DL\$2	Results (Amount) CTO2016	0.00	232.00	Normal
\$DM\$2	Results (Amount) WEP2012	0.00	1.32	Normal
\$DN\$2	Results (Amount) WEP2013	0.00	1.48	Normal
\$DO\$2	Results (Amount) WEP2014	0.00	1.66	Normal
\$DP\$2	Results (Amount) WEP2015	0.00	1.86	Normal
\$DQ\$2	Results (Amount) WEP2016	0.00	2.08	Normal

### Constraints

Cell	Name	Cell Value <sup>1</sup>	Formula <sup>2</sup>	Status <sup>3</sup>	Slack <sup>4</sup>
\$M\$101	FLP 2012 Required Used	5	\$M\$101>=\$N\$101	Binding	-
\$M\$102	FLP 2013 Required Used	6	\$M\$102>=\$N\$102	Binding	-
\$M\$103	FLP 2014 Required Used	7	\$M\$103>=\$N\$103	Binding	-
\$M\$104	FLP 2015 Required Used	8	\$M\$104>=\$N\$104	Binding	-
\$M\$105	FLP 2016 Required Used	10	\$M\$105>=\$N\$105	Binding	-
\$M\$106	R & D 2012 Required Used	166	\$M\$106>=\$N\$106	Binding	-
\$M\$107	R & D 2013 Required Used	206	\$M\$107>=\$N\$107	Binding	-
\$M\$108	R & D 2014 Required Used	238	\$M\$108>=\$N\$108	Binding	-
\$M\$109	R & D 2015 Required Used	274	\$M\$109>=\$N\$109	Binding	-
\$M\$110	R & D 2016 Required Used	316	\$M\$110>=\$N\$110	Binding	-
\$M\$111	WLB 2012 Required Used	0	\$M\$111>=\$N\$111	Binding	-
\$M\$112	WLB 2013 Required Used	0	\$M\$112>=\$N\$112	Binding	-
\$M\$113	WLB 2014 Required Used	0	\$M\$113>=\$N\$113	Binding	-
\$M\$114	WLB 2015 Required Used	0	\$M\$114>=\$N\$114	Binding	-

<sup>1</sup>The cell value column shows the final (optimal) value assumed by each constraint cell. These values correspond to the final value assumed by the left hand side formula of each constraint.

<sup>2</sup> The formula column indicates the upper or lower bounds that apply to each constraint cell.

<sup>3</sup>The status column indicates which constraints are binding and which are non-binding. A constraint is binding if all sources are used up so it is satisfied as a strict equality in the optimal solution; otherwise, it is non-binding.

<sup>4</sup>The values in the slack column indicate the difference between the left hand side and right hand side of each equation or inequality constraint. By definition, binding constraints have zero slack and non-binding constraints have some positive level of slack.

\$M\$115	WLB 2016 Required Used	0	\$M\$115>=\$N\$115	Binding	-
\$M\$116	CTO 2012 Required Used	280	\$M\$116=\$N\$116	Binding	-
\$M\$117	CTO 2013 Required Used	268	\$M\$117=\$N\$117	Binding	-
\$M\$118	CTO 2014 Required Used	257	\$M\$118=\$N\$118	Binding	-
\$M\$119	CTO 2015 Required Used	244	\$M\$119=\$N\$119	Binding	-
\$M\$120	CTO 2016 Required Used	232	\$M\$120=\$N\$120	Binding	-
\$M\$11	PSC 2012 Required Used	29,643	\$M\$11>=\$N\$11	Binding	-
\$M\$12	PSC 2013 Required Used	0	\$M\$12>=\$N\$12	Binding	-
\$M\$13	PSC 2014 Required Used	0	\$M\$13>=\$N\$13	Binding	-
\$M\$14	PSC 2015 Required Used	0	\$M\$14>=\$N\$14	Binding	-
\$M\$15	PSC 2016 Required Used	0	\$M\$15>=\$N\$15	Binding	-
\$M\$121	WEP 2012 Required Used	0	\$M\$121>=\$N\$121	Binding	-
\$M\$122	WEP 2013 Required Used	0	\$M\$122>=\$N\$122	Binding	-
\$M\$123	WEP 2014 Required Used	0	\$M\$123>=\$N\$123	Binding	-
\$M\$124	WEP 2015 Required Used	0	\$M\$124>=\$N\$124	Binding	-
\$M\$125	WEP 2016 Required Used	0	\$M\$125>=\$N\$125	Binding	-
\$M\$16	EWB 2012 Required Used	5,915	\$M\$16>=\$N\$16	Binding	-
\$M\$17	EWB 2013 Required Used	0	\$M\$17>=\$N\$17	Binding	-
\$M\$18	EWB 2014 Required Used	0	\$M\$18>=\$N\$18	Binding	-
\$M\$19	EWB 2015 Required Used	0	\$M\$19>=\$N\$19	Binding	-
\$M\$20	EWB 2016 Required Used	0	\$M\$20>=\$N\$20	Binding	-
\$M\$21	DIV 2012 Required Used	6,181	\$M\$21>=\$N\$21	Binding	-
\$M\$22	DIV 2013 Required Used	0	\$M\$22>=\$N\$22	Binding	-
\$M\$23	DIV 2014 Required Used	0	\$M\$23>=\$N\$23	Binding	-
\$M\$24	DIV 2015 Required Used	0	\$M\$24>=\$N\$24	Binding	-
\$M\$25	DIV 2016 Required Used	0	\$M\$25>=\$N\$25	Binding	-
\$M\$26	Interest Coverage 2012 Required Used	32,182	\$M\$26=\$N\$26	Binding	-
\$M\$27	Interest Coverage 2013 Required Used	36,092	\$M\$27=\$N\$27	Binding	-
\$M\$28	Interest Coverage 2014 Required Used	40,477	\$M\$28=\$N\$28	Binding	-
\$M\$29	Interest Coverage 2015 Required Used	45,395	\$M\$29=\$N\$29	Binding	-
\$M\$30	Interest Coverage 2016 Required Used	50,911	\$M\$30=\$N\$30	Binding	-

\$M\$31	ERE 2012 Required Used	500	\$M\$31>=\$N\$31	Binding	-
\$M\$32	ERE 2013 Required Used	0	\$M\$32>=\$N\$32	Binding	-
\$M\$33	ERE 2014 Required Used	0	\$M\$33>=\$N\$33	Binding	-
\$M\$34	ERE 2015 Required Used	0	\$M\$34>=\$N\$34	Binding	-
\$M\$35	ERE 2016 Required Used	0	\$M\$35>=\$N\$35	Binding	-
\$M\$36	EC 2012 Required Used	620	\$M\$36=\$N\$36	Binding	-
\$M\$37	EC 2013 Required Used	0	\$M\$37=\$N\$37	Binding	-
\$M\$38	EC 2014 Required Used	0	\$M\$38=\$N\$38	Binding	-
\$M\$39	EC 2015 Required Used	0	\$M\$39=\$N\$39	Binding	-
\$M\$40	EC 2016 Required Used	0	\$M\$40=\$N\$40	Binding	-
\$M\$41	BLE 2012 Required Used	4	\$M\$41>=\$N\$41	Binding	-
\$M\$42	BLE 2013 Required Used	0	\$M\$42>=\$N\$42	Binding	-
\$M\$43	BLE 2014 Required Used	0	\$M\$43>=\$N\$43	Binding	-
\$M\$44	BLE 2015 Required Used	0	\$M\$44>=\$N\$44	Binding	-
\$M\$45	BLE 2016 Required Used	0	\$M\$45>=\$N\$45	Binding	-
\$M\$46	CC 2012 Required Used	322	\$M\$46>=\$N\$46	Binding	-
\$M\$47	CC 2013 Required Used	361	\$M\$47>=\$N\$47	Binding	-
\$M\$48	CC 2014 Required Used	405	\$M\$48>=\$N\$48	Binding	-
\$M\$49	CC 2015 Required Used	454	\$M\$49>=\$N\$49	Binding	-
\$M\$50	CC 2016 Required Used	509	\$M\$50>=\$N\$50	Binding	-
\$M\$51	EPE 2012 Required Used	644	\$M\$51>=\$N\$51	Binding	-
\$M\$52	EPE 2013 Required Used	722	\$M\$52>=\$N\$52	Binding	-
\$M\$53	EPE 2014 Required Used	810	\$M\$53>=\$N\$53	Binding	-
\$M\$54	EPE 2015 Required Used	908	\$M\$54>=\$N\$54	Binding	-
\$M\$55	EPE 2016 Required Used	1,018	\$M\$55>=\$N\$55	Binding	-
\$M\$56	ATP 2012 Required Used	22,527	\$M\$56=\$N\$56	Binding	-
\$M\$57	ATP 2013 Required Used	25,264	\$M\$57=\$N\$57	Binding	-
\$M\$58	ATP 2014 Required Used	28,334	\$M\$58=\$N\$58	Binding	-
\$M\$59	ATP 2015 Required Used	31,777	\$M\$59=\$N\$59	Binding	-
\$M\$60	ATP 2016 Required Used	35,638	\$M\$60=\$N\$60	Binding	-
\$M\$61	Inv. FA 2012 Required Used	839	\$M\$61>=\$N\$61	Binding	-

\$M\$62	Inv. FA 2013 Required Used	941	\$M\$62>=\$N\$62	Binding	-
\$M\$63	Inv. FA 2014 Required Used	1,055	\$M\$63>=\$N\$63	Binding	-
\$M\$64	Inv. FA 2015 Required Used	1,184	\$M\$64>=\$N\$64	Binding	-
\$M\$65	Inv. FA 2016 Required Used	1,328	\$M\$65>=\$N\$65	Binding	-
\$M\$66	Inv. CA 2012 Required Used	82,162	\$M\$66>=\$N\$66	Binding	-
\$M\$67	Inv. CA 2013 Required Used	0	\$M\$67>=\$N\$67	Binding	-
\$M\$68	Inv. CA 2014 Required Used	0	\$M\$68>=\$N\$68	Binding	-
\$M\$69	Inv. CA 2015 Required Used	0	\$M\$69>=\$N\$69	Binding	-
\$M\$70	Inv. CA 2016 Required Used	0	\$M\$70>=\$N\$70	Binding	-
\$M\$6	PG 2012 Required Used	9,655	\$M\$6=\$N\$6	Binding	-
\$M\$7	PG 2013 Required Used	10,828	\$M\$7=\$N\$7	Binding	-
\$M\$8	PG 2014 Required Used	12,143	\$M\$8=\$N\$8	Binding	-
\$M\$9	PG 2015 Required Used	13,619	\$M\$9=\$N\$9	Binding	-
\$M\$10	PG 2016 Required Used	15,273	\$M\$10=\$N\$10	Binding	-
\$M\$71	TEF 2012 Required Used	0	\$M\$71=\$N\$71	Binding	-
\$M\$72	TEF 2013 Required Used	0	\$M\$72=\$N\$72	Binding	-
\$M\$73	TEF 2014 Required Used	0	\$M\$73=\$N\$73	Binding	-
\$M\$74	TEF 2015 Required Used	0	\$M\$74=\$N\$74	Binding	-
\$M\$75	TEF 2016 Required Used	0	\$M\$75=\$N\$75	Binding	-
\$M\$76	Provision 2012 Required Used	9,079	\$M\$76>=\$N\$76	Binding	-
\$M\$77	Provision 2013 Required Used	0	\$M\$77>=\$N\$77	Binding	-
\$M\$78	Provision 2014 Required Used	0	\$M\$78>=\$N\$78	Binding	-
\$M\$79	Provision 2015 Required Used	0	\$M\$79>=\$N\$79	Binding	-
\$M\$80	Provision 2016 Required Used	0	\$M\$80>=\$N\$80	Binding	-
\$M\$81	HSEC 2012 Required Used	50	\$M\$81>=\$N\$81	Binding	-
\$M\$82	HSEC 2013 Required Used	0	\$M\$82>=\$N\$82	Binding	-
\$M\$83	HSEC 2014 Required Used	0	\$M\$83>=\$N\$83	Binding	-
\$M\$84	HSEC 2015 Required Used	0	\$M\$84>=\$N\$84	Binding	-
\$M\$85	HSEC 2016 Required Used	0	\$M\$85>=\$N\$85	Binding	-
\$M\$86	Comm. Exp. 2012 Required Used	251	\$M\$86>=\$N\$86	Binding	-
\$M\$87	Comm. Exp. 2013 Required Used	290	\$M\$87>=\$N\$87	Binding	-

\$M\$88	Comm. Exp. 2014 Required Used	334	\$M\$88>=\$N\$88	Binding	-
\$M\$89	Comm. Exp. 2015 Required Used	385	\$M\$89>=\$N\$89	Binding	-
\$M\$90	Comm. Exp. 2016 Required Used	444	\$M\$90>=\$N\$90	Binding	-
\$M\$91	Lit. Exp. 2012 Required Used	712	\$M\$91>=\$N\$91	Binding	-
\$M\$92	Lit. Exp. 2013 Required Used	712	\$M\$92>=\$N\$92	Binding	-
\$M\$93	Lit. Exp. 2014 Required Used	712	\$M\$93>=\$N\$93	Binding	-
\$M\$94	Lit. Exp. 2015 Required Used	712	\$M\$94>=\$N\$94	Binding	-
\$M\$95	Lit. Exp. 2016 Required Used	712	\$M\$95>=\$N\$95	Binding	-
\$M\$96	FRE 2012 Required Used	10	\$M\$96>=\$N\$96	Binding	-
\$M\$97	FRE 2013 Required Used	13	\$M\$97>=\$N\$97	Binding	-
\$M\$98	FRE 2014 Required Used	14	\$M\$98>=\$N\$98	Binding	-
\$M\$99	FRE 2015 Required Used	17	\$M\$99>=\$N\$99	Binding	-
\$M\$100	FRE 2016 Required Used	19	\$M\$100>=\$N\$100	Binding	-
\$B\$2	Results (Amount) PSC 2012	29,643.00	\$B\$2>=0	Not Binding	29,643.00
\$C\$2	Results (Amount) PSC 2013	42,389.49	\$C\$2>=0	Not Binding	42,389.49
\$D\$2	Results (Amount) PSC 2014	60,616.97	\$D\$2>=0	Not Binding	60,616.97
\$E\$2	Results (Amount) PSC 2015	86,682.27	\$E\$2>=0	Not Binding	86,682.27
\$F\$2	Results (Amount) PSC 2016	123,955.64	\$F\$2>=0	Not Binding	123,955.64
\$G\$2	Results (Amount) EWB 2012	5,915.00	\$G\$2>=0	Not Binding	5,915.00
\$H\$2	Results (Amount) EWB 2013	6,376.37	\$H\$2>=0	Not Binding	6,376.37
\$I\$2	Results (Amount) EWB 2014	6,873.73	\$I\$2>=0	Not Binding	6,873.73
\$J\$2	Results (Amount) EWB 2015	7,409.88	\$J\$2>=0	Not Binding	7,409.88
\$K\$2	Results (Amount) EWB 2016	7,987.85	\$K\$2>=0	Not Binding	7,987.85
\$L\$2	Results (Amount) DIV 2012	6,181.00	\$L\$2>=0	Not Binding	6,181.00
\$M\$2	Results (Amount) DIV 2013	7,559.36	\$M\$2>=0	Not Binding	7,559.36
\$N\$2	Results (Amount) DIV 2014	9,245.10	\$N\$2>=0	Not Binding	9,245.10
\$O\$2	Results (Amount) DIV 2015	11,306.76	\$O\$2>=0	Not Binding	11,306.76
\$P\$2	Results (Amount) DIV 2016	13,828.17	\$P\$2>=0	Not Binding	13,828.17
\$Q\$2	Results (Amount) LTD 2012	25,541.27	\$Q\$2>=0	Not Binding	25,541.27
\$R\$2	Results (Amount) LTD 2013	28,644.44	\$R\$2>=0	Not Binding	28,644.44
\$S\$2	Results (Amount) LTD 2014	32,124.60	\$S\$2>=0	Not Binding	32,124.60
\$T\$2	Results (Amount) LTD 2015	36,027.78	\$T\$2>=0	Not Binding	36,027.78
\$U\$2	Results (Amount) LTD 2016	40,405.56	\$U\$2>=0	Not Binding	40,405.56
\$V\$2	Results (Amount) PG 2012	9,195.26	\$V\$2>=0	Not Binding	9,195.26
\$W\$2	Results (Amount) PG 2013	10,312.40	\$W\$2>=0	Not Binding	10,312.40
\$X\$2	Results (Amount) PG 2014	11,564.76	\$X\$2>=0	Not Binding	11,564.76
\$Y\$2	Results (Amount) PG 2015	12,970.50	\$Y\$2>=0	Not Binding	12,970.50
\$Z\$2	Results (Amount) PG 2016	14,545.70	\$Z\$2>=0	Not Binding	14,545.70

\$AA\$2	Results (Amount) CC 2012	306.68	\$AA\$2>=0	Not Binding	306.68
\$AB\$2	Results (Amount) CC 2013	343.81	\$AB\$2>=0	Not Binding	343.81
\$AC\$2	Results (Amount) CC 2014	385.73	\$AC\$2>=0	Not Binding	385.73
\$AD\$2	Results (Amount) CC 2015	432.38	\$AD\$2>=0	Not Binding	432.38
\$AE\$2	Results (Amount) CC 2016	484.76	\$AE\$2>=0	Not Binding	484.76
\$AF\$2	Results (Amount) ERE 2012	500.00	\$AF\$2>=0	Not Binding	500.00
\$AG\$2	Results (Amount) ERE 2013	500.00	\$AG\$2>=0	Not Binding	500.00
\$AH\$2	Results (Amount) ERE 2014	500.00	\$AH\$2>=0	Not Binding	500.00
\$AI\$2	Results (Amount) ERE 2015	500.00	\$AI\$2>=0	Not Binding	500.00
\$AJ\$2	Results (Amount) ERE 2016	500.00	\$AJ\$2>=0	Not Binding	500.00
\$AK\$2	Results (Amount) EC 2012	620.00	\$AK\$2>=0	Not Binding	620.00
\$AL\$2	Results (Amount) EC 2013	611.32	\$AL\$2>=0	Not Binding	611.32
\$AM\$2	Results (Amount) EC 2014	602.76	\$AM\$2>=0	Not Binding	602.76
\$AN\$2	Results (Amount) EC 2015	594.32	\$AN\$2>=0	Not Binding	594.32
\$AO\$2	Results (Amount) EC 2016	586.00	\$AO\$2>=0	Not Binding	586.00
\$AP\$2	Results (Amount) EPE 2012	613.35	\$AP\$2>=0	Not Binding	613.35
\$AQ\$2	Results (Amount) EPE 2013	687.63	\$AQ\$2>=0	Not Binding	687.63
\$AR\$2	Results (Amount) EPE 2014	771.45	\$AR\$2>=0	Not Binding	771.45
\$AS\$2	Results (Amount) EPE 2015	864.77	\$AS\$2>=0	Not Binding	864.77
\$AT\$2	Results (Amount) EPE 2016	969.51	\$AT\$2>=0	Not Binding	969.51
\$AU\$2	Results (Amount) BLE 2012	4.40	\$AU\$2>=0	Not Binding	4.40
\$AV\$2	Results (Amount) BLE 2013	4.40	\$AV\$2>=0	Not Binding	4.40
\$AW\$2	Results (Amount) BLE 2014	4.40	\$AW\$2>=0	Not Binding	4.40
\$AX\$2	Results (Amount) BLE 2015	4.40	\$AX\$2>=0	Not Binding	4.40
\$AY\$2	Results (Amount) BLE 2016	4.40	\$AY\$2>=0	Not Binding	4.40
\$AZ\$2	Results (Amount) ATP 2012	21,454.27	\$AZ\$2>=0	Not Binding	21,454.27
\$BA\$2	Results (Amount) ATP 2013	24,060.93	\$BA\$2>=0	Not Binding	24,060.93
\$BB\$2	Results (Amount) ATP 2014	26,984.77	\$BB\$2>=0	Not Binding	26,984.77
\$BC\$2	Results (Amount) ATP 2015	30,263.83	\$BC\$2>=0	Not Binding	30,263.83
\$BD\$2	Results (Amount) ATP 2016	33,940.97	\$BD\$2>=0	Not Binding	33,940.97
\$BE\$2	Results (Amount) InvFA2012	839.00	\$BE\$2>=0	Not Binding	839.00
\$BF\$2	Results (Amount) InvFA2013	941.00	\$BF\$2>=0	Not Binding	941.00
\$BG\$2	Results (Amount) InvFA2014	1,055.00	\$BG\$2>=0	Not Binding	1,055.00

\$BH\$2	Results (Amount) InvFA2015	1,184.00	\$BH\$2>=0	Not Binding	1,184.00
\$BI\$2	Results (Amount) InvFA2016	1,328.00	\$BI\$2>=0	Not Binding	1,328.00
\$BJ\$2	Results (Amount) InvCA2012	82,162.00	\$BJ\$2>=0	Not Binding	82,162.00
\$BK\$2	Results (Amount) InvCA2013	98,594.40	\$BK\$2>=0	Not Binding	98,594.40
\$BL\$2	Results (Amount) InvCA2014	118,313.28	\$BL\$2>=0	Not Binding	118,313.28
\$BM\$2	Results (Amount) InvCA2015	141,975.94	\$BM\$2>=0	Not Binding	141,975.94
\$BN\$2	Results (Amount) InvCA2016	170,371.12	\$BN\$2>=0	Not Binding	170,371.12
\$BO\$2	Results (Amount) TF 2012	0.06	\$BO\$2>=0	Not Binding	0.06
\$BP\$2	Results (Amount) TF 2013	0.07	\$BP\$2>=0	Not Binding	0.07
\$BQ\$2	Results (Amount) TF 2014	0.08	\$BQ\$2>=0	Not Binding	0.08
\$BR\$2	Results (Amount) TF 2015	0.09	\$BR\$2>=0	Not Binding	0.09
\$BS\$2	Results (Amount) TF 2016	0.10	\$BS\$2>=0	Not Binding	0.10
\$BT\$2	Results (Amount) Prov. 2012	9,079.00	\$BT\$2>=0	Not Binding	9,079.00
\$BU\$2	Results (Amount) Prov. 2013	10,350.06	\$BU\$2>=0	Not Binding	10,350.06
\$BV\$2	Results (Amount) Prov. 2014	11,799.07	\$BV\$2>=0	Not Binding	11,799.07
\$BW\$2	Results (Amount) Prov. 2015	13,450.94	\$BW\$2>=0	Not Binding	13,450.94
\$BX\$2	Results (Amount) Prov. 2016	15,334.07	\$BX\$2>=0	Not Binding	15,334.07
\$BY\$2	Results (Amount) HSEC2012	50.00	\$BY\$2>=0	Not Binding	50.00
\$BZ\$2	Results (Amount) HSEC2013	55.00	\$BZ\$2>=0	Not Binding	55.00
\$CA\$2	Results (Amount) HSEC2014	60.50	\$CA\$2>=0	Not Binding	60.50
\$CB\$2	Results (Amount) HSEC2015	66.55	\$CB\$2>=0	Not Binding	66.55
\$CC\$2	Results (Amount) HSEC2016	73.21	\$CC\$2>=0	Not Binding	73.21
\$CD\$2	Results (Amount) Comm. Exp. 2012	251.00	\$CD\$2>=0	Not Binding	251.00
\$CE\$2	Results (Amount) Comm. Exp. 2013	290.00	\$CE\$2>=0	Not Binding	290.00
\$CF\$2	Results (Amount) Comm. Exp. 2014	334.00	\$CF\$2>=0	Not Binding	334.00
\$CG\$2	Results (Amount) Comm. Exp. 2015	385.00	\$CG\$2>=0	Not Binding	385.00
\$CH\$2	Results (Amount) Comm. Exp. 2016	444.00	\$CH\$2>=0	Not Binding	444.00
\$CI\$2	Results (Amount) LitExp2012	712.00	\$CI\$2>=0	Not Binding	712.00
\$CJ\$2	Results (Amount) LitExp2013	712.00	\$CJ\$2>=0	Not Binding	712.00
\$CK\$2	Results (Amount) LitExp2014	712.00	\$CK\$2>=0	Not Binding	712.00
\$CL\$2	Results (Amount) LitExp2015	712.00	\$CL\$2>=0	Not Binding	712.00
\$CM\$2	Results (Amount) LitExp2016	712.00	\$CM\$2>=0	Not Binding	712.00
\$CN\$2	Results (Amount) FRE 2012	10.00	\$CN\$2>=0	Not Binding	10.00
\$CO\$2	Results (Amount) FRE 2013	13.00	\$CO\$2>=0	Not Binding	13.00
\$CPS\$2	Results (Amount) FRE 2014	14.00	\$CPS\$2>=0	Not Binding	

					14.00
\$CQ\$2	Results (Amount) FRE 2015	17.00	\$CQ\$2>=0	Not Binding	17.00
\$CR\$2	Results (Amount) FRE 2016	19.00	\$CR\$2>=0	Not Binding	19.00
\$CS\$2	Results (Amount) FLP 2012	5.06	\$CS\$2>=0	Not Binding	5.06
\$CT\$2	Results (Amount) FLP 2013	6.28	\$CT\$2>=0	Not Binding	6.28
\$CU\$2	Results (Amount) FLP 2014	7.24	\$CU\$2>=0	Not Binding	7.24
\$CV\$2	Results (Amount) FLP 2015	8.35	\$CV\$2>=0	Not Binding	8.35
\$CW\$2	Results (Amount) FLP 2016	9.63	\$CW\$2>=0	Not Binding	9.63
\$CX\$2	Results (Amount) R&D2012	166.00	\$CX\$2>=0	Not Binding	166.00
\$CY\$2	Results (Amount) R&D2013	206.00	\$CY\$2>=0	Not Binding	206.00
\$CZ\$2	Results (Amount) R&D2014	238.00	\$CZ\$2>=0	Not Binding	238.00
\$DA\$2	Results (Amount) R&D2015	274.00	\$DA\$2>=0	Not Binding	274.00
\$DB\$2	Results (Amount) R&D2016	316.00	\$DB\$2>=0	Not Binding	316.00
\$DC\$2	Results (Amount) WLB2012	59.15	\$DC\$2>=0	Not Binding	59.15
\$DD\$2	Results (Amount) WLB2013	63.76	\$DD\$2>=0	Not Binding	63.76
\$DE\$2	Results (Amount) WLB2014	68.74	\$DE\$2>=0	Not Binding	68.74
\$DF\$2	Results (Amount) WLB2015	74.10	\$DF\$2>=0	Not Binding	74.10
\$DG\$2	Results (Amount) WLB2016	79.88	\$DG\$2>=0	Not Binding	79.88
\$DH\$2	Results (Amount) CTO2012	280.00	\$DH\$2>=0	Not Binding	280.00
\$DI\$2	Results (Amount) CTO2013	268.00	\$DI\$2>=0	Not Binding	268.00
\$DJ\$2	Results (Amount) CTO2014	257.00	\$DJ\$2>=0	Not Binding	257.00
\$DK\$2	Results (Amount) CTO2015	244.00	\$DK\$2>=0	Not Binding	244.00
\$DL\$2	Results (Amount) CTO2016	232.00	\$DL\$2>=0	Not Binding	232.00
\$DM\$2	Results (Amount) WEP2012	1.32	\$DM\$2>=0	Not Binding	1.32
\$DN\$2	Results (Amount) WEP2013	1.48	\$DN\$2>=0	Not Binding	1.48
\$DO\$2	Results (Amount) WEP2014	1.66	\$DO\$2>=0	Not Binding	1.66
\$DP\$2	Results (Amount) WEP2015	1.86	\$DP\$2>=0	Not Binding	1.86
\$DQ\$2	Results (Amount) WEP2016	2.08	\$DQ\$2>=0	Not Binding	2.08

## APPENDIX 2 SENSITIVITY ANALYSIS

**Microsoft Excel 14.0 Sensitivity Report**  
**Worksheet: [Qn Solver.xlsx]FRE FLP**  
**Report Created: 1/21/2014 7:49:38 PM**  
**Engine: Standard LP/Quadratic**

Objective Cell (Max)

Cell	Name	Final Value
\$D\$3	Coefficient OBJECTIVE	40,121.72

Decision Variable Cells

Cell	Name	Final Value	Reduced Cost	Objective Coefficient	Allowable Increase	Allowable Decrease
\$B\$2	Results (Amount) PSC 2012	29,643.00	0.00	-1	11.58	1E+30
\$C\$2	Results (Amount) PSC 2013	42,389.49	0.00	-1	7.40	1E+30
\$D\$2	Results (Amount) PSC 2014	60,616.97	0.00	-1	4.47	1E+30
\$E\$2	Results (Amount) PSC 2015	86,682.27	0.00	-1	2.43	1E+30
\$F\$2	Results (Amount) PSC 2016	123,955.64	0.00	-1	1.00	1E+30
\$G\$2	Results (Amount) EWB 2012	5,915.00	0.00	-1	5.84	1E+30
\$H\$2	Results (Amount) EWB 2013	6,376.37	0.00	-1	4.49	1E+30
\$I\$2	Results (Amount) EWB 2014	6,873.73	0.00	-1	3.24	1E+30
\$J\$2	Results (Amount) EWB 2015	7,409.88	0.00	-1	2.08	1E+30
\$K\$2	Results (Amount) EWB 2016	7,987.85	0.00	-1	1.00	1E+30
\$L\$2	Results (Amount) DIV 2012	6,181.00	0.00	-1	7.79	1E+30
\$M\$2	Results (Amount) DIV 2013	7,559.36	0.00	-1	5.55	1E+30
\$N\$2	Results (Amount) DIV 2014	9,245.10	0.00	-1	3.72	1E+30
\$O\$2	Results (Amount) DIV 2015	11,306.76	0.00	-1	2.22	1E+30
\$P\$2	Results (Amount) DIV 2016	13,828.17	0.00	-1	1.00	1E+30
\$Q\$2	Results (Amount) LTD 2012	25,541.27	0.00	-0.06	1E+30	1E+30
\$R\$2	Results (Amount) LTD 2013	28,644.44	0.00	-0.06	1E+30	1E+30
\$S\$2	Results (Amount) LTD 2014	32,124.60	0.00	-0.06	1E+30	1E+30
\$T\$2	Results (Amount) LTD 2015	36,027.78	0.00	-0.06	1E+30	1E+30
\$U\$2	Results (Amount) LTD 2016	40,405.56	0.00	-0.06	1E+30	1E+30
\$V\$2	Results (Amount) PG 2012	9,195.26	0.00	-1	1E+30	1E+30
\$W\$2	Results (Amount) PG 2013	10,312.40	0.00	-1	1E+30	1E+30
\$X\$2	Results (Amount) PG 2014	11,564.76	0.00	-1	1E+30	1E+30

\$Y\$2	Results (Amount) PG 2015	12,970.50	0.00	-1	1E+30	1E+30
\$Z\$2	Results (Amount) PG 2016	14,545.70	0.00	-1	1E+30	1E+30
\$AA\$2	Results (Amount) CC 2012	306.68	0.00	-1	1.00	1E+30
\$AB\$2	Results (Amount) CC 2013	343.81	0.00	-1	1.00	1E+30
\$AC\$2	Results (Amount) CC 2014	385.73	0.00	-1	1.00	1E+30
\$AD\$2	Results (Amount) CC 2015	432.38	0.00	-1	1.00	1E+30
\$AE\$2	Results (Amount) CC 2016	484.76	0.00	-1	1.00	1E+30
\$AF\$2	Results (Amount) ERE 2012	500.00	0.00	-1	5.00	1E+30
\$AG\$2	Results (Amount) ERE 2013	500.00	0.00	-1	4.00	1E+30
\$AH\$2	Results (Amount) ERE 2014	500.00	0.00	-1	3.00	1E+30
\$AI\$2	Results (Amount) ERE 2015	500.00	0.00	-1	2.00	1E+30
\$AJ\$2	Results (Amount) ERE 2016	500.00	0.00	-1	1.00	1E+30
\$AK\$2	Results (Amount) EC 2012	620.00	0.00	-1	1E+30	1E+30
\$AL\$2	Results (Amount) EC 2013	611.32	0.00	-1	1E+30	1E+30
\$AM\$2	Results (Amount) EC 2014	602.76	0.00	-1	1E+30	1E+30
\$AN\$2	Results (Amount) EC 2015	594.32	0.00	-1	1E+30	1E+30
\$AO\$2	Results (Amount) EC 2016	586.00	0.00	-1	1E+30	1E+30
\$AP\$2	Results (Amount) EPE 2012	613.35	0.00	-1	1.00	1E+30
\$AQ\$2	Results (Amount) EPE 2013	687.63	0.00	-1	1.00	1E+30
\$AR\$2	Results (Amount) EPE 2014	771.45	0.00	-1	1.00	1E+30
\$AS\$2	Results (Amount) EPE 2015	864.77	0.00	-1	1.00	1E+30
\$AT\$2	Results (Amount) EPE 2016	969.51	0.00	-1	1.00	1E+30
\$AU\$2	Results (Amount) BLE 2012	4.40	0.00	-1	5.00	1E+30
\$AV\$2	Results (Amount) BLE 2013	4.40	0.00	-1	4.00	1E+30
\$AW\$2	Results (Amount) BLE 2014	4.40	0.00	-1	3.00	1E+30
\$AX\$2	Results (Amount) BLE 2015	4.40	0.00	-1	2.00	1E+30
\$AY\$2	Results (Amount) BLE 2016	4.40	0.00	-1	1.00	1E+30
\$AZ\$2	Results (Amount) ATP 2012	21,454.27	0.00	0	1E+30	1E+30
\$BA\$2	Results (Amount) ATP 2013	24,060.93	0.00	0	1E+30	1E+30
\$BB\$2	Results (Amount) ATP 2014	26,984.77	0.00	0	1E+30	1E+30
\$BC\$2	Results (Amount) ATP 2015	30,263.83	0.00	0	1E+30	1E+30
\$BD\$2	Results (Amount) ATP 2016	33,940.97	0.00	0	1E+30	1E+30
\$BE\$2	Results (Amount) InvFA2012	839.00	0.00	0	0.0000001	1E+30
\$BF\$2	Results (Amount) InvFA2013	941.00	0.00	0	0.0000001	1E+30
\$BG\$2	Results (Amount) InvFA2014	1,055.00	0.00	0	0.0000001	1E+30

\$BH\$2	Results (Amount) InvFA2015	1,184.00	0.00	0	0.0000001	1E+30
\$BI\$2	Results (Amount) InvFA2016	1,328.00	0.00	0	0.0000001	1E+30
\$BJ\$2	Results (Amount) InvCA2012	82,162.00	0.00	0	0.00	1E+30
\$BK\$2	Results (Amount) InvCA2013	98,594.40	0.00	0	0.00	1E+30
\$BL\$2	Results (Amount) InvCA2014	118,313.28	0.00	0	0.00	1E+30
\$BM\$2	Results (Amount) InvCA2015	141,975.94	0.00	0	0.00	1E+30
\$BN\$2	Results (Amount) InvCA2016	170,371.12	0.00	0	0.00	1E+30
\$BO\$2	Results (Amount) TF 2012	0.06	0.00	0	10,000.01	1E+30
\$BP\$2	Results (Amount) TF 2013	0.07	0.00	0	10,000.01	1E+30
\$BQ\$2	Results (Amount) TF 2014	0.08	0.00	0	10,000.01	1E+30
\$BR\$2	Results (Amount) TF 2015	0.09	0.00	0	10,000.01	1E+30
\$BS\$2	Results (Amount) TF 2016	0.10	0.00	0	10,000.01	1E+30
\$BT\$2	Results (Amount) Prov 2012	9,079.00	0.00	0	0.00	1E+30
\$BU\$2	Results (Amount) Prov 2013	10,350.06	0.00	0	0.00	1E+30
\$BV\$2	Results (Amount) Prov 2014	11,799.07	0.00	0	0.00	1E+30
\$BW\$2	Results (Amount) Prov 2015	13,450.94	0.00	0	0.00	1E+30
\$BX\$2	Results (Amount) Prov 2016	15,334.07	0.00	0	0.00	1E+30
\$BY\$2	Results (Amount) HSEC2012	50.00	0.00	0	0.00	1E+30
\$BZ\$2	Results (Amount) HSEC2013	55.00	0.00	0	0.00	1E+30
\$CA\$2	Results (Amount) HSEC2014	60.50	0.00	0	0.00	1E+30
\$CB\$2	Results (Amount) HSEC2015	66.55	0.00	0	0.00	1E+30
\$CC\$2	Results (Amount) HSEC2016	73.21	0.00	0	0.00	1E+30
\$CD\$2	Results (Amount) Comm Exp 2012	251.00	0.00	0	0.0000001	1E+30
\$CE\$2	Results (Amount) Comm Exp 2013	290.00	0.00	0	0.0000001	1E+30
\$CF\$2	Results (Amount) Comm Exp 2014	334.00	0.00	0	0.0000001	1E+30
\$CG\$2	Results (Amount) Comm Exp 2015	385.00	0.00	0	0.0000001	1E+30
\$CH\$2	Results (Amount) Comm Exp 2016	444.00	0.00	0	0.0000001	1E+30
\$CI\$2	Results (Amount) LitExp2012	712.00	0.00	0	0.0000001	1E+30
\$CJ\$2	Results (Amount) LitExp2013	712.00	0.00	0	0.0000001	1E+30
\$CK\$2	Results (Amount) LitExp2014	712.00	0.00	0	0.0000001	1E+30
\$CL\$2	Results (Amount) LitExp2015	712.00	0.00	0	0.0000001	1E+30
\$CM\$2	Results (Amount) LitExp2016	712.00	0.00	0	0.0000001	1E+30
\$CN\$2	Results (Amount) FRE 2012	10.00	0.00	0	0.0000001	1E+30
\$CO\$2	Results (Amount) FRE 2013	13.00	0.00	0	0.0000001	1E+30
\$CP\$2	Results (Amount) FRE 2014	14.00	0.00	0	0.0000001	1E+30
\$CQ\$2	Results (Amount) FRE 2015	17.00	0.00	0	0.0000001	1E+30
\$CR\$2	Results (Amount) FRE 2016	19.00	0.00	0	0.0000001	1E+30

\$CS\$2	Results (Amount) FLP 2012	5.06	0.00	0	0.0000001	1E+30
\$CT\$2	Results (Amount) FLP 2013	6.28	0.00	0	0.0000001	1E+30
\$CU\$2	Results (Amount) FLP 2014	7.24	0.00	0	0.0000001	1E+30
\$CV\$2	Results (Amount) FLP 2015	8.35	0.00	0	0.0000001	1E+30
\$CW\$2	Results (Amount) FLP 2016	9.63	0.00	0	0.0000001	1E+30
\$CX\$2	Results (Amount) R&D2012	166.00	0.00	0	0.0000001	1E+30
\$CY\$2	Results (Amount) R&D2013	206.00	0.00	0	0.0000001	1E+30
\$CZ\$2	Results (Amount) R&D2014	238.00	0.00	0	0.0000001	1E+30
\$DA\$2	Results (Amount) R&D2015	274.00	0.00	0	0.0000001	1E+30
\$DB\$2	Results (Amount) R&D2016	316.00	0.00	0	0.0000001	1E+30
\$DC\$2	Results (Amount) WLB2012	59.15	0.00	0	1.79505E-06	1E+30
\$DD\$2	Results (Amount) WLB2013	63.76	0.00	0	1.79505E-06	1E+30
\$DE\$2	Results (Amount) WLB2014	68.74	0.00	0	1.79505E-06	1E+30
\$DF\$2	Results (Amount) WLB2015	74.10	0.00	0	1.79505E-06	1E+30
\$DG\$2	Results (Amount) WLB2016	79.88	0.00	0	1.76166E-06	1E+30
\$DH\$2	Results (Amount) CTO2012	280.00	0.00	0	1E+30	1E+30
\$DI\$2	Results (Amount) CTO2013	268.00	0.00	0	1E+30	1E+30
\$DJ\$2	Results (Amount) CTO2014	257.00	0.00	0	1E+30	1E+30
\$DK\$2	Results (Amount) CTO2015	244.00	0.00	0	1E+30	1E+30
\$DL\$2	Results (Amount) CTO2016	232.00	0.00	0	1E+30	1E+30
\$DM\$2	Results (Amount) WEP2012	1.32	0.00	0	7.61751E-06	1E+30
\$DN\$2	Results (Amount) WEP2013	1.48	0.00	0	7.61751E-06	1E+30
\$DO\$2	Results (Amount) WEP2014	1.66	0.00	0	7.61751E-06	1E+30
\$DP\$2	Results (Amount) WEP2015	1.86	0.00	0	7.61751E-06	1E+30
\$DQ\$2	Results (Amount) WEP2016	2.08	0.00	0	7.61751E-06	1E+30

## Constraints

Cell	Name	Final Value	Shadow Price	Constraint R.H. Side	Allowable Increase	Allowable Decrease
\$M\$101	FLP 2012 Required Used	5	0	5.06	1E+30	5.06
\$M\$102	FLP 2013 Required Used	6	0	6.28	1E+30	6.28
\$M\$103	FLP 2014 Required Used	7	0	7.24	1E+30	7.24
\$M\$104	FLP 2015 Required Used	8	0	8.35	1E+30	8.35
\$M\$105	FLP 2016 Required Used	10	0	9.63	1E+30	9.63
\$M\$106	R &D 2012 Required Used	166	0	166	1E+30	166
\$M\$107	R &D 2013 Required Used	206	0	206	1E+30	206
\$M\$108	R &D 2014 Required Used	238	0	238	1E+30	238
\$M\$109	R &D 2015 Required Used	274	0	274	1E+30	274
\$M\$110	R &D 2016 Required Used	316	0	316	1E+30	316
\$M\$111	WLB 2012 Required Used	0	0	0	1E+30	59.15
\$M\$112	WLB 2013 Required Used	0	0	0	1E+30	63.76
\$M\$113	WLB 2014 Required Used	0	0	0	1E+30	68.74

\$M\$114	WLB 2015 Required Used	0	0	0	1E+30	74.10
\$M\$115	WLB 2016 Required Used	0	0	0	1E+30	79.88
\$M\$116	CTO 2012 Required Used	280	0	280	1E+30	280
\$M\$117	CTO 2013 Required Used	268	0	268	1E+30	268
\$M\$118	CTO 2014 Required Used	257	0	257	1E+30	257
\$M\$119	CTO 2015 Required Used	244	0	244	1E+30	244
\$M\$120	CTO 2016 Required Used	232	0	232	1E+30	232
\$M\$11	PSC 2012 Required Used	29,643	-12	29,643.00	1E+30	29,643.00
\$M\$12	PSC 2013 Required Used	0	-7	0	1E+30	42,389.49
\$M\$13	PSC 2014 Required Used	0	-4	0	1E+30	60,616.97
\$M\$14	PSC 2015 Required Used	0	-2	0	1E+30	86,682.27
\$M\$15	PSC 2016 Required Used	0	-1	0	1E+30	123,955.64
\$M\$121	WEP 2012 Required Used	0	0	0	1E+30	1.32
\$M\$122	WEP 2013 Required Used	0	0	0	1E+30	1.48
\$M\$123	WEP 2014 Required Used	0	0	0	1E+30	1.66
\$M\$124	WEP 2015 Required Used	0	0	0	1E+30	1.86
\$M\$125	WEP 2016 Required Used	0	0	0	1E+30	2.08
\$M\$16	EWB 2012 Required Used	5,915	-6	5,915.00	1E+30	5,915.00
\$M\$17	EWB 2013 Required Used	0	-4	0	1E+30	6,376.37
\$M\$18	EWB 2014 Required Used	0	-3	0	1E+30	6,873.73
\$M\$19	EWB 2015 Required Used	0	-2	0	1E+30	7,409.88
\$M\$20	EWB 2016 Required Used	0	-1	0	1E+30	7,987.85
\$M\$21	DIV 2012 Required Used	6,181	-8	6181	1E+30	6,181.00
\$M\$22	DIV 2013 Required Used	0	-6	0	1E+30	7,559.36
\$M\$23	DIV 2014 Required Used	0	-4	0	1E+30	9,245.10
\$M\$24	DIV 2015 Required Used	0	-2	0	1E+30	11,306.76
\$M\$25	DIV 2016 Required Used	0	-1	0	1E+30	13,828.17
\$M\$26	LTD 2012 Required Used	32,182	-0	32182	643628	32,182.00
\$M\$27	LTD 2013 Required Used	36,092	-0	36092	721828	36,092.00
\$M\$28	LTD 2014 Required Used	40,477	-0	40477	809533	40,477.00
\$M\$29	LTD 2015 Required Used	45,395	-0	45395	907915	45,395.00
\$M\$30	LTD 2016 Required Used	50,911	-0	50911	1017989	50,911.00
\$M\$31	ERE 2012 Required Used	500	-5	500	1E+30	500

\$M\$32	ERE 2013 Required Used	0	-4	0	1E+30	500
\$M\$33	ERE 2014 Required Used	0	-3	0	1E+30	500
\$M\$34	ERE 2015 Required Used	0	-2	0	1E+30	500
\$M\$35	ERE 2016 Required Used	0	-1	0	1E+30	500
\$M\$36	EC 2012 Required Used	620	-5	620	1E+30	620
\$M\$37	EC 2013 Required Used	0	-4	0	1E+30	611.32
\$M\$38	EC 2014 Required Used	0	-3	0	1E+30	602.76
\$M\$39	EC 2015 Required Used	0	-2	0	1E+30	594.32
\$M\$40	EC 2016 Required Used	0	-1	0	1E+30	586.00
\$M\$41	BLE 2012 Required Used	4	-5	4.4	1E+30	4.4
\$M\$42	BLE 2013 Required Used	0	-4	0	1E+30	4.4
\$M\$43	BLE 2014 Required Used	0	-3	0	1E+30	4.4
\$M\$44	BLE 2015 Required Used	0	-2	0	1E+30	4.4
\$M\$45	BLE 2016 Required Used	0	-1	0	1E+30	4.4
\$M\$46	CC 2012 Required Used	322	-1	322	1E+30	306.68
\$M\$47	CC 2013 Required Used	361	-1	361	1E+30	343.81
\$M\$48	CC 2014 Required Used	405	-1	405	1E+30	385.73
\$M\$49	CC 2015 Required Used	454	-1	454	1E+30	432.38
\$M\$50	CC 2016 Required Used	509	-1	509	1E+30	484.76
\$M\$51	EPE 2012 Required Used	644	-1	644	1E+30	613.35
\$M\$52	EPE 2013 Required Used	722	-1	722	1E+30	687.63
\$M\$53	EPE 2014 Required Used	810	-1	810	1E+30	771.45
\$M\$54	EPE 2015 Required Used	908	-1	908	1E+30	864.77
\$M\$55	EPE 2016 Required Used	1,018	-1	1018	1E+30	969.51
\$M\$56	ATP 2012 Required Used	22,527	0	22527	1E+30	21,454.27
\$M\$57	ATP 2013 Required Used	25,264	0	25264	1E+30	24,060.93
\$M\$58	ATP 2014 Required Used	28,334	0	28334	1E+30	26,984.77
\$M\$59	ATP 2015 Required Used	31,777	0	31777	1E+30	30,263.83
\$M\$60	ATP 2016 Required Used	35,638	0	35638	1E+30	33,940.97
\$M\$61	Inv. FA 2012 Required Used	839	0	839	1E+30	839
\$M\$62	Inv. FA 2012 Required Used	941	0	941	1E+30	941
\$M\$63	Inv. FA 2012 Required Used	1,055	0	1055	1E+30	1,055.00
\$M\$64	Inv. FA 2012 Required Used	1,184	0	1184	1E+30	1,184.00
\$M\$65	Inv. FA 2012 Required Used	1,328	0	1328	1E+30	1,328.00
\$M\$66	Inv. CA 2012 Required Used	82,162	0	82162	1E+30	82,162.00

\$M\$67	Inv. CA 2013 Required Used	0	0	0	1E+30	98,594.40
\$M\$68	Inv. CA 2014 Required Used	0	0	0	1E+30	118,313.28
\$M\$69	Inv. CA 2015 Required Used	0	0	0	1E+30	141,975.94
\$M\$70	Inv. CA 2016 Required Used	0	0	0	1E+30	170,371.12
\$M\$6	PG 2012 Required Used	9,655	-1	9655	1E+30	9,195.26
\$M\$7	PG 2013 Required Used	10,828	-1	10828	1E+30	10,312.40
\$M\$8	PG 2014 Required Used	12,143	-1	12143	1E+30	11,564.76
\$M\$9	PG 2015 Required Used	13,619	-1	13619	1E+30	12,970.50
\$M\$10	PG 2016 Required Used	15,273	-1	15273	1E+30	14,545.70
\$M\$71	TEF 2012 Required Used	0	0	0	1E+30	0.06
\$M\$72	TEF 2013 Required Used	0	0	0	1E+30	0.07
\$M\$73	TEF 2014 Required Used	0	0	0	1E+30	0.08
\$M\$74	TEF 2015 Required Used	0	0	0	1E+30	0.09
\$M\$75	TEF 2016 Required Used	0	0	0	1E+30	0.10
\$M\$76	Prov. 2012 Required Used	9,079	0	9079	1E+30	9,079.00
\$M\$77	Prov. 2013 Required Used	0	0	0	1E+30	10,350.06
\$M\$78	Prov. 2014 Required Used	0	0	0	1E+30	11,799.07
\$M\$79	Prov. 2015 Required Used	0	0	0	1E+30	13,450.94
\$M\$80	Prov. 2016 Required Used	0	0	0	1E+30	15,334.07
\$M\$81	HSEC 2012 Required Used	50	0	50	1E+30	50.00
\$M\$82	HSEC 2013 Required Used	0	0	0	1E+30	55.00
\$M\$83	HSEC 2014 Required Used	0	0	0	1E+30	60.50
\$M\$84	HSEC 2015 Required Used	0	0	0	1E+30	66.55
\$M\$85	HSEC 2016 Required Used	0	0	0	1E+30	73.21
\$M\$86	Comm. Exp. 2012 Required Used	251	0	251	1E+30	251
\$M\$87	Comm. Exp. 2013 Required Used	290	0	290	1E+30	290
\$M\$88	Comm. Exp. 2014 Required Used	334	0	334	1E+30	334
\$M\$89	Comm. Exp. 2015 Required Used	385	0	385	1E+30	385
\$M\$90	Comm. Exp. 2016 Required Used	444	0	444	1E+30	444
\$M\$91	Lit. Exp. 2012 Required Used	712	0	712	1E+30	712
\$M\$92	Lit. Exp. 2013 Required Used	712	0	712	1E+30	712
\$M\$93	Lit. Exp. 2014 Required Used	712	0	712	1E+30	712
\$M\$94	Lit. Exp. 2015 Required Used	712	0	712	1E+30	712
\$M\$95	Lit. Exp. 2016 Required Used	712	0	712	1E+30	712

\$M\$96	FRE 2012 Required Used	10	0	10	1E+30	10
\$M\$97	FRE 2013 Required Used	13	0	13	1E+30	13
\$M\$98	FRE 2014 Required Used	14	0	14	1E+30	14
\$M\$99	FRE 2015 Required Used	17	0	17	1E+30	17
\$M\$100	FRE 2016 Required Used	19	0	19	1E+30	19

**APPENDIX 3 SENSITIVITY ANALYSIS FOR SCENARIO 1: INCREASE THE  
REVENUES**

**Microsoft Excel 15.0 Answer Report**

**Worksheet: [Sensitivity Analysis Rev growth 20 percent.xlsx]FRE FLP**

**Report Created: 1/20/2014 5:56:27 PM**

**Result: Solver found a solution. All constraints and optimality conditions are satisfied.**

**Engine: Gurobi Solver**

**Solution Time: 01 Seconds**

**Iterations: 0**

**Subproblems: 0**

**Incumbent Solutions: 0**

Objective Cell (Max)

<b>Cell</b>	<b>Name</b>	<b>Original Value</b>	<b>Final Value</b>
\$D\$3	Economic value retained	645,000	122,734.72

Decision Variable Cells

<b>Cell</b>	<b>Name</b>	<b>Original Value</b>	<b>Final Value</b>	<b>Type</b>
\$B\$2	Results (Amount) PSC 2012	0.00	29,643.00	Normal
\$C\$2	Results (Amount) PSC 2013	0.00	42,389.49	Normal
\$D\$2	Results (Amount) PSC 2014	0.00	60,616.97	Normal
\$E\$2	Results (Amount) PSC 2015	0.00	86,682.27	Normal
\$F\$2	Results (Amount) PSC 2016	0.00	123,955.64	Normal
\$G\$2	Results (Amount) EWB 2012	0.00	5,915.00	Normal
\$H\$2	Results (Amount) EWB 2013	0.00	6,376.37	Normal
\$I\$2	Results (Amount) EWB 2014	0.00	6,873.73	Normal
\$J\$2	Results (Amount) EWB 2015	0.00	7,409.88	Normal
\$K\$2	Results (Amount) EWB 2016	0.00	7,987.85	Normal
\$L\$2	Results (Amount) DIV 2012	0.00	6,181.00	Normal
\$M\$2	Results (Amount) DIV 2013	0.00	7,559.36	Normal
\$N\$2	Results (Amount) DIV 2014	0.00	9,245.10	Normal
\$O\$2	Results (Amount) DIV 2015	0.00	11,306.76	Normal
\$P\$2	Results (Amount) DIV 2016	0.00	13,828.17	Normal
\$Q\$2	Results (Amount) LTD 2012	0.00	25,541.27	Normal
\$R\$2	Results (Amount) LTD 2013	0.00	28,644.44	Normal
\$S\$2	Results (Amount) LTD 2014	0.00	32,124.60	Normal
\$T\$2	Results (Amount) LTD 2015	0.00	36,027.78	Normal
\$U\$2	Results (Amount) LTD 2016	0.00	40,405.56	Normal

\$V\$2	Results (Amount) PG 2012	0.00	9,440.26	Normal
\$W\$2	Results (Amount) PG 2013	0.00	10,869.40	Normal
\$X\$2	Results (Amount) PG 2014	0.00	12,514.76	Normal
\$Y\$2	Results (Amount) PG 2015	0.00	19,427.50	Normal
\$Z\$2	Results (Amount) PG 2016	0.00	22,359.70	Normal
\$AA\$2	Results (Amount) CC 2012	0.00	314.68	Normal
\$AB\$2	Results (Amount) CC 2013	0.00	362.81	Normal
\$AC\$2	Results (Amount) CC 2014	0.00	416.73	Normal
\$AD\$2	Results (Amount) CC 2015	0.00	480.38	Normal
\$AE\$2	Results (Amount) CC 2016	0.00	552.76	Normal
\$AF\$2	Results (Amount) ERE 2012	0.00	500.00	Normal
\$AG\$2	Results (Amount) ERE 2013	0.00	500.00	Normal
\$AH\$2	Results (Amount) ERE 2014	0.00	500.00	Normal
\$AI\$2	Results (Amount) ERE 2015	0.00	500.00	Normal
\$AJ\$2	Results (Amount) ERE 2016	0.00	500.00	Normal
\$AK\$2	Results (Amount) EC 2012	0.00	620.00	Normal
\$AL\$2	Results (Amount) EC 2013	0.00	611.32	Normal
\$AM\$2	Results (Amount) EC 2014	0.00	602.76	Normal
\$AN\$2	Results (Amount) EC 2015	0.00	594.32	Normal
\$AO\$2	Results (Amount) EC 2016	0.00	586.00	Normal
\$AP\$2	Results (Amount) EPE 2012	0.00	629.35	Normal
\$AQ\$2	Results (Amount) EPE 2013	0.00	724.63	Normal
\$AR\$2	Results (Amount) EPE 2014	0.00	834.45	Normal
\$AS\$2	Results (Amount) EPE 2015	0.00	960.77	Normal
\$AT\$2	Results (Amount) EPE 2016	0.00	1,105.51	Normal
\$AU\$2	Results (Amount) BLE 2012	0.00	4.40	Normal
\$AV\$2	Results (Amount) BLE 2013	0.00	4.40	Normal
\$AW\$2	Results (Amount) BLE 2014	0.00	4.40	Normal
\$AX\$2	Results (Amount) BLE 2015	0.00	4.40	Normal
\$AY\$2	Results (Amount) BLE 2016	0.00	4.40	Normal
\$AZ\$2	Results (Amount) ATP 2012	0.00	21,454.27	Normal
\$BA\$2	Results (Amount) ATP 2013	0.00	24,060.93	Normal
\$BB\$2	Results (Amount) ATP 2014	0.00	26,984.77	Normal
\$BC\$2	Results (Amount) ATP 2015	0.00	30,263.83	Normal
\$BD\$2	Results (Amount) ATP 2016	0.00	33,940.97	Normal
\$BE\$2	Results (Amount) InvFA2012	0.00	860.00	Normal
\$BF\$2	Results (Amount) InvFA2013	0.00	990.00	Normal
\$BG\$2	Results (Amount) InvFA2014	0.00	1,138.00	Normal
\$BH\$2	Results (Amount) InvFA2015	0.00	1,309.00	Normal
\$BI\$2	Results (Amount) InvFA2016	0.00	1,505.00	Normal
\$BJ\$2	Results (Amount) InvCA2012	0.00	82,162.00	Normal
\$BK\$2	Results (Amount) InvCA2013	0.00	98,594.40	Normal
\$BL\$2	Results (Amount) InvCA2014	0.00	118,313.28	Normal

\$BM\$2	Results (Amount) InvCA2015	0.00	141,975.94	Normal
\$BN\$2	Results (Amount) InvCA2016	0.00	170,371.12	Normal
\$BO\$2	Results (Amount) TEF 2012	0.00	0.06	Normal
\$BP\$2	Results (Amount) TEF 2013	0.00	0.07	Normal
\$BQ\$2	Results (Amount) TEF 2014	0.00	0.08	Normal
\$BR\$2	Results (Amount) TEF 2015	0.00	0.10	Normal
\$BS\$2	Results (Amount) TEF 2016	0.00	0.11	Normal
\$BT\$2	Results (Amount) Prov 2012	0.00	9,079.00	Normal
\$BU\$2	Results (Amount) Prov 2013	0.00	10,350.06	Normal
\$BV\$2	Results (Amount) Prov 2014	0.00	11,799.07	Normal
\$BW\$2	Results (Amount) Prov 2015	0.00	13,450.94	Normal
\$BX\$2	Results (Amount) Prov 2016	0.00	15,334.07	Normal
\$BY\$2	Results (Amount) HSEC2012	0.00	55.00	Normal
\$BZ\$2	Results (Amount) HSEC2013	0.00	60.50	Normal
\$CA\$2	Results (Amount) HSEC2014	0.00	66.55	Normal
\$CB\$2	Results (Amount) HSEC2015	0.00	73.21	Normal
\$CC\$2	Results (Amount) HSEC2016	0.00	80.53	Normal
\$CD\$2	Results (Amount) Comm Exp 2012	0.00	202.00	Normal
\$CE\$2	Results (Amount) Comm Exp 2013	0.00	273.00	Normal
\$CF\$2	Results (Amount) Comm Exp 2014	0.00	328.00	Normal
\$CG\$2	Results (Amount) Comm Exp 2015	0.00	393.00	Normal
\$CH\$2	Results (Amount) Comm Exp 2016	0.00	472.00	Normal
\$CI\$2	Results (Amount) LitExp2012	0.00	712.00	Normal
\$CJ\$2	Results (Amount) LitExp2013	0.00	712.00	Normal
\$CK\$2	Results (Amount) LitExp2014	0.00	712.00	Normal
\$CL\$2	Results (Amount) LitExp2015	0.00	712.00	Normal
\$CM\$2	Results (Amount) LitExp2016	0.00	712.00	Normal
\$CN\$2	Results (Amount) FRE 2012	0.00	10.00	Normal
\$CO\$2	Results (Amount) FRE 2013	0.00	14.00	Normal
\$CP\$2	Results (Amount) FRE 2014	0.00	16.00	Normal
\$CQ\$2	Results (Amount) FRE 2015	0.00	20.00	Normal
\$CR\$2	Results (Amount) FRE 2016	0.00	24.00	Normal
\$CS\$2	Results (Amount) FLP 2012	0.00	5.06	Normal
\$CT\$2	Results (Amount) FLP 2013	0.00	6.83	Normal
\$CU\$2	Results (Amount) FLP 2014	0.00	8.19	Normal
\$CV\$2	Results (Amount) FLP 2015	0.00	9.83	Normal
\$CW\$2	Results (Amount) FLP 2016	0.00	11.79	Normal
\$CX\$2	Results (Amount) R&D2012	0.00	166.00	Normal
\$CY\$2	Results (Amount) R&D2013	0.00	224.00	Normal

\$CZ\$2	Results (Amount) R&D2014	0.00	269.00	Normal
\$DA\$2	Results (Amount) R&D2015	0.00	322.00	Normal
\$DB\$2	Results (Amount) R&D2016	0.00	387.00	Normal
\$DC\$2	Results (Amount) WLB2012	0.00	59.15	Normal
\$DD\$2	Results (Amount) WLB2013	0.00	63.76	Normal
\$DE\$2	Results (Amount) WLB2014	0.00	68.74	Normal
\$DF\$2	Results (Amount) WLB2015	0.00	74.10	Normal
\$DG\$2	Results (Amount) WLB2016	0.00	79.88	Normal
\$DH\$2	Results (Amount) CTO2012	0.00	280.00	Normal
\$DI\$2	Results (Amount) CTO2013	0.00	268.00	Normal
\$DJ\$2	Results (Amount) CTO2014	0.00	257.00	Normal
\$DK\$2	Results (Amount) CTO2015	0.00	244.00	Normal
\$DL\$2	Results (Amount) CTO2016	0.00	232.00	Normal
\$DM\$2	Results (Amount) WEP2012	0.00	1.35	Normal
\$DN\$2	Results (Amount) WEP2013	0.00	1.56	Normal
\$DO\$2	Results (Amount) WEP2014	0.00	1.79	Normal
\$DP\$2	Results (Amount) WEP2015	0.00	2.07	Normal
\$DQ\$2	Results (Amount) WEP2016	0.00	2.38	Normal

**APPENDIX 4 SENSITIVITY ANALYSIS FOR SCENARIO 2: DECREASE  
CERTAIN EXPENSES**

**Microsoft Excel 14.0 Answer Report**

**Worksheet: [Sensitivity Analysis Scenario 2 Expenses.xlsx]FRE FLP**

**Report Created: 1/22/2014 9:13:50 PM**

**Result: Solver found a solution. All constraints and optimality conditions are satisfied.**

**Engine: Standard LP/Quadratic**

**Solution Time: 00 Seconds**

**Iterations: 0**

**Subproblems: 0**

**Incumbent Solutions: 0**

Objective Cell (Max)

<b>Cell</b>	<b>Name</b>	<b>Original Value</b>	<b>Final Value</b>
\$DS\$3	Economic value retained	545,842.00	58,955.52

Decision Variable Cells

<b>Cell</b>	<b>Name</b>	<b>Original Value</b>	<b>Final Value</b>	<b>Type</b>
\$B\$2	Results (Amount) PSC 2012	0.00	28,347.00	Normal
\$C\$2	Results (Amount) PSC 2013	0.00	40,536.21	Normal
\$D\$2	Results (Amount) PSC 2014	0.00	57,966.78	Normal
\$E\$2	Results (Amount) PSC 2015	0.00	82,892.50	Normal
\$F\$2	Results (Amount) PSC 2016	0.00	118,536.27	Normal
\$G\$2	Results (Amount) EWB 2012	0.00	5,675.00	Normal
\$H\$2	Results (Amount) EWB 2013	0.00	5,902.00	Normal
\$I\$2	Results (Amount) EWB 2014	0.00	6,138.08	Normal
\$J\$2	Results (Amount) EWB 2015	0.00	6,383.60	Normal
\$K\$2	Results (Amount) EWB 2016	0.00	6,638.95	Normal
\$L\$2	Results (Amount) DIV 2012	0.00	6,181.00	Normal
\$M\$2	Results (Amount) DIV 2013	0.00	7,559.36	Normal
\$N\$2	Results (Amount) DIV 2014	0.00	9,245.10	Normal
\$O\$2	Results (Amount) DIV 2015	0.00	11,306.76	Normal
\$P\$2	Results (Amount) DIV 2016	0.00	13,828.17	Normal
\$Q\$2	Results (Amount) LTD 2012	0.00	25,541.27	Normal
\$R\$2	Results (Amount) LTD 2013	0.00	28,644.44	Normal
\$S\$2	Results (Amount) LTD 2014	0.00	32,124.60	Normal
\$T\$2	Results (Amount) LTD 2015	0.00	36,027.78	Normal

\$U\$2	Results (Amount) LTD 2016	0.00	40,405.56	Normal
\$V\$2	Results (Amount) PG 2012	0.00	9,195.26	Normal
\$W\$2	Results (Amount) PG 2013	0.00	10,312.40	Normal
\$X\$2	Results (Amount) PG 2014	0.00	11,564.76	Normal
\$Y\$2	Results (Amount) PG 2015	0.00	12,970.50	Normal
\$Z\$2	Results (Amount) PG 2016	0.00	14,545.70	Normal
\$AA\$2	Results (Amount) CC 2012	0.00	306.68	Normal
\$AB\$2	Results (Amount) CC 2013	0.00	343.81	Normal
\$AC\$2	Results (Amount) CC 2014	0.00	385.73	Normal
\$AD\$2	Results (Amount) CC 2015	0.00	432.38	Normal
\$AE\$2	Results (Amount) CC 2016	0.00	484.76	Normal
\$AF\$2	Results (Amount) ERE 2012	0.00	500.00	Normal
\$AG\$2	Results (Amount) ERE 2013	0.00	500.00	Normal
\$AH\$2	Results (Amount) ERE 2014	0.00	500.00	Normal
\$AI\$2	Results (Amount) ERE 2015	0.00	500.00	Normal
\$AJ\$2	Results (Amount) ERE 2016	0.00	500.00	Normal
\$AK\$2	Results (Amount) EC 2012	0.00	620.00	Normal
\$AL\$2	Results (Amount) EC 2013	0.00	611.32	Normal
\$AM\$2	Results (Amount) EC 2014	0.00	602.76	Normal
\$AN\$2	Results (Amount) EC 2015	0.00	594.32	Normal
\$AO\$2	Results (Amount) EC 2016	0.00	586.00	Normal
\$AP\$2	Results (Amount) EPE 2012	0.00	613.35	Normal
\$AQ\$2	Results (Amount) EPE 2013	0.00	687.63	Normal
\$AR\$2	Results (Amount) EPE 2014	0.00	771.45	Normal
\$AS\$2	Results (Amount) EPE 2015	0.00	864.77	Normal
\$AT\$2	Results (Amount) EPE 2016	0.00	969.51	Normal
\$AU\$2	Results (Amount) BLE 2012	0.00	4.40	Normal
\$AV\$2	Results (Amount) BLE 2013	0.00	4.40	Normal
\$AW\$2	Results (Amount) BLE 2014	0.00	4.40	Normal
\$AX\$2	Results (Amount) BLE 2015	0.00	4.40	Normal
\$AY\$2	Results (Amount) BLE 2016	0.00	4.40	Normal
\$AZ\$2	Results (Amount) ATP 2012	0.00	21,454.27	Normal
\$BA\$2	Results (Amount) ATP 2013	0.00	24,060.93	Normal
\$BB\$2	Results (Amount) ATP 2014	0.00	26,984.77	Normal
\$BC\$2	Results (Amount) ATP 2015	0.00	30,263.83	Normal
\$BD\$2	Results (Amount) ATP 2016	0.00	33,940.97	Normal
\$BE\$2	Results (Amount) InvFA2012	0.00	839.00	Normal
\$BF\$2	Results (Amount) InvFA2013	0.00	941.00	Normal
\$BG\$2	Results (Amount) InvFA2014	0.00	1,055.00	Normal
\$BH\$2	Results (Amount) InvFA2015	0.00	1,184.00	Normal
\$BI\$2	Results (Amount) InvFA2016	0.00	1,328.00	Normal
\$BJ\$2	Results (Amount) InvCA2012	0.00	82,162.00	Normal
\$BK\$2	Results (Amount) InvCA2013	0.00	98,594.40	Normal

\$BL\$2	Results (Amount) InvCA2014	0.00	118,313.28	Normal
\$BM\$2	Results (Amount) InvCA2015	0.00	141,975.94	Normal
\$BN\$2	Results (Amount) InvCA2016	0.00	170,371.12	Normal
\$BO\$2	Results (Amount) TEF 2012	0.00	0.06	Normal
\$BP\$2	Results (Amount) TEF 2013	0.00	0.07	Normal
\$BQ\$2	Results (Amount) TEF 2014	0.00	0.08	Normal
\$BR\$2	Results (Amount) TEF 2015	0.00	0.09	Normal
\$BS\$2	Results (Amount) TEF 2016	0.00	0.10	Normal
\$BT\$2	Results (Amount) Prov 2012	0.00	9,079.00	Normal
\$BU\$2	Results (Amount) Prov 2013	0.00	10,350.06	Normal
\$BV\$2	Results (Amount) Prov 2014	0.00	11,799.07	Normal
\$BW\$2	Results (Amount) Prov 2015	0.00	13,450.94	Normal
\$BX\$2	Results (Amount) Prov 2016	0.00	15,334.07	Normal
\$BY\$2	Results (Amount) HSEC2012	0.00	50.00	Normal
\$BZ\$2	Results (Amount) HSEC2013	0.00	55.00	Normal
\$CA\$2	Results (Amount) HSEC2014	0.00	60.50	Normal
\$CB\$2	Results (Amount) HSEC2015	0.00	66.55	Normal
\$CC\$2	Results (Amount) HSEC2016	0.00	73.21	Normal
\$CD\$2	Results (Amount) Comm Exp 2012	0.00	251.00	Normal
\$CE\$2	Results (Amount) Comm Exp 2013	0.00	290.00	Normal
\$CF\$2	Results (Amount) Comm Exp 2014	0.00	334.00	Normal
\$CG\$2	Results (Amount) Comm Exp 2015	0.00	385.00	Normal
\$CH\$2	Results (Amount) Comm Exp 2016	0.00	444.00	Normal
\$CI\$2	Results (Amount) LitExp2012	0.00	712.00	Normal
\$CJ\$2	Results (Amount) LitExp2013	0.00	712.00	Normal
\$CK\$2	Results (Amount) LitExp2014	0.00	712.00	Normal
\$CL\$2	Results (Amount) LitExp2015	0.00	712.00	Normal
\$CM\$2	Results (Amount) LitExp2016	0.00	712.00	Normal
\$CN\$2	Results (Amount) FRE 2012	0.00	10.00	Normal
\$CO\$2	Results (Amount) FRE 2013	0.00	13.00	Normal
\$CP\$2	Results (Amount) FRE 2014	0.00	14.00	Normal
\$CQ\$2	Results (Amount) FRE 2015	0.00	17.00	Normal
\$CR\$2	Results (Amount) FRE 2016	0.00	19.00	Normal
\$CS\$2	Results (Amount) FLP 2012	0.00	5.06	Normal
\$CT\$2	Results (Amount) FLP 2013	0.00	6.28	Normal
\$CU\$2	Results (Amount) FLP 2014	0.00	7.24	Normal
\$CV\$2	Results (Amount) FLP 2015	0.00	8.35	Normal
\$CW\$2	Results (Amount) FLP 2016	0.00	9.63	Normal
\$CX\$2	Results (Amount) R&D2012	0.00	166.00	Normal

\$CY\$2	Results (Amount) R&D2013	0.00	206.00	Normal
\$CZ\$2	Results (Amount) R&D2014	0.00	238.00	Normal
\$DA\$2	Results (Amount) R&D2015	0.00	274.00	Normal
\$DB\$2	Results (Amount) R&D2016	0.00	316.00	Normal
\$DC\$2	Results (Amount) WLB2012	0.00	56.75	Normal
\$DD\$2	Results (Amount) WLB2013	0.00	59.02	Normal
\$DE\$2	Results (Amount) WLB2014	0.00	61.38	Normal
\$DF\$2	Results (Amount) WLB2015	0.00	63.84	Normal
\$DG\$2	Results (Amount) WLB2016	0.00	66.39	Normal
\$DH\$2	Results (Amount) CTO2012	0.00	280.00	Normal
\$DI\$2	Results (Amount) CTO2013	0.00	268.00	Normal
\$DJ\$2	Results (Amount) CTO2014	0.00	257.00	Normal
\$DK\$2	Results (Amount) CTO2015	0.00	244.00	Normal
\$DL\$2	Results (Amount) CTO2016	0.00	232.00	Normal
\$DM\$2	Results (Amount) WEP2012	0.00	1.32	Normal
\$DN\$2	Results (Amount) WEP2013	0.00	1.48	Normal
\$DO\$2	Results (Amount) WEP2014	0.00	1.66	Normal
\$DP\$2	Results (Amount) WEP2015	0.00	1.86	Normal
\$DQ\$2	Results (Amount) WEP2016	0.00	2.08	Normal

## APPENDIX 5 EXTRACT DATA FOR CONTENT ANALYSIS FOR 2011

THEMES	2011	
	SUSTAINABILITY REPORT	ANNUAL REPORT
No of report pages	48	268
<b>The disclosure of gender/feminist issues</b>		
The number of woman executives	Page 9: We are striving to achieve diversity, in all its forms, at all levels of our organisation. Our Board of Directors, for example, is made up of 12 members, who represent seven nationalities. Two members are female, 10 are aged 50 and over and two are aged between 40 and 49 years.	
The policy regarding the family matter of woman staff (work life balance, childcare, flexible working hours, etc)	Page 18: BMA Blackwater mine in Queensland, Australia, supports the Indigenous Women's Leadership Group Our aim is to develop and sustain meaningful and trusting relationships with people impacted by, and interested in, our business.	
Gender diversity policy	Page 9: At BHP Billiton, we believe that Our Charter value of respect cannot be met if we do not embrace openness, trust, teamwork and diversity. We are striving to achieve diversity, in all its forms, at all levels of our organisation. Our Board of Directors, for example, is made up of 12 members, who represent seven nationalities. Two members are female, 10 are aged 50 and over and two are aged between 40 and 49 years. The Group Management Committee (GMC) took active steps in FY2010 to improve the diversity profile of the Group. It oversaw the analysis of the profile of each part of the business to better understand representation by	Page 113: Corporate governance reviews have highlighted that there is a continuing lack of diversity amongst experienced Director candidates in Australia, the UK and the US. The Board reviewed its existing practices during the year, including how the Board and the Nomination Committee have taken into account diversity criteria, including gender, nationality and geography, as part of a Director candidate's general background and experience. The review included an assessment of the Board Committees'

	gender, age and nationality.	Terms of Reference, and resulted in amendments to the Terms of Reference of the Nomination Committee and the Remuneration Committee to formalise diversity considerations. The Board has set an aspirational goal of increasing the number of female Directors to at least three over the next two years (which, if achieved, would see the proportion of women on the Board increase from 17 per cent currently to 25 per cent, based on a Board size of 12).
	<p>Page 9: We remain committed to increasing female participation in the Accelerated Leadership Development Program to 40 per cent by the end of FY2012. During the year, we also reviewed pay equity based on gender across our senior management* population, which revealed a female to male salary ratio of 1.005:1.000. We are satisfied that our process of remunerating employees in this grouping is based on skills, experience and size of role and is not tainted by structural bias on the basis of gender.</p> <p>Another focus area for us is ensuring that the right gender balance is struck in our graduate intake.</p>	<p>Page 128: Going forward, progress against each year's measurable objectives will be disclosed in the Annual Report, along with the proportion of women in our workforce, in senior management and on the Board.</p> <p>There are currently two women on the Board and the proportion of women in our workforce and in senior management is set out in section 2.8.3, where you can also find further information on diversity and our employee profile more generally.</p>
	<p>Page 11: Graduates are recruited from a variety of disciplines. On recent estimates, approximately 30 per cent of our graduates are female and approximately 70 per cent male, a disparity we are addressing through our diversity</p>	<p>Page 48: Supporting workforce diversity We are striving to achieve diversity, in all its forms, at all levels of our organisation. The GMC took active steps in FY2010 to improve the</p>

	objectives.	<p>diversity profile of the Group. It oversaw the analysis of the profile of each part of the business to better understand representation by gender, age and nationality. It then required each business group to develop a diversity plan to address shortcomings. Those plans were completed and assessed as part of the annual performance process. Each plan is targeted at addressing the particular issues facing individual business groups and each contains a range of strategies, including targets. Plans will be tracked and monitored throughout FY2012 and will again form part of the annual performance review process at year-end.</p> <p>Females currently represent 16 per cent of our workforce.</p> <p>Approximately 10 per cent of senior management positions are held by females.</p> <p>We remain committed to increasing female participation in the Accelerated Leadership Development Program to 40 per cent by the end of FY2012.</p> <p>Another focus area for us is ensuring that the right gender balance is struck in our graduate intake.</p>
--	-------------	--

		<p>Page 113: Diversity on the Board</p> <p>Corporate governance reviews have highlighted that there is a continuing lack of diversity amongst experienced Director candidates in Australia, the UK and the US. The Board reviewed its existing practices during the year, including how the Board and the Nomination Committee have taken into account diversity criteria, including gender, nationality and geography, as part of a Director candidate's general background and experience.</p> <p>The review included an assessment of the Board Committees' Terms of Reference, and resulted in amendments to the Terms of Reference of the Nomination Committee and the Remuneration Committee to formalise diversity considerations. The Board has set an aspirational goal of increasing the number of female Directors to at least three over the next two years (which, if achieved, would see the proportion of women on the Board increase from 17 per cent currently to 25 per cent, based on a Board size of 12)</p>
<p>Gender equality for women as consumers, suppliers, investors, and as part of the community</p>	<p>Page 25: There were 84 instances regarding harassment/discrimination and equality in employment. All were reviewed and formal</p>	<p>Page 127: Performance evaluation for executives</p> <p>The performance of executives and other senior employees is reviewed on</p>

	<p>investigations were conducted of 31, with one open as at 30 June 2011. Disciplinary proceedings, including termination, were instituted in 17 cases. An annual reporting cycle assists us to identify trends and patterns of reported incidents.</p>	<p>an annual basis. For members of the GMC, this review includes their contribution, engagement and interaction at Board level. The annual performance review process that we employ considers the performance of executives against criteria designed to capture both 'what' is achieved and 'how' it is achieved. All performance assessments of executives consider how effective they have been in undertaking their role; what they have achieved against their specified key performance indicators; how they match up to the behaviours prescribed in our leadership model and how those behaviours align with Our BHP Billiton Charter values. The assessment is therefore holistic and balances absolute achievement with the way performance has been delivered. Progression within the Group is driven equally by personal leadership behaviours and capability to produce excellent results. A performance evaluation as outlined above was conducted for all members of the GMC in FY2011. For the CEO, the performance evaluation was led by the Chairman of the Board on behalf of all the Non-executive Directors, drawing on guidance from the Remuneration Committee.</p>
--	---	---

	<p>Page 9: During the year, we also reviewed pay equity based on gender across our senior management* population, which revealed a female to male salary ratio of 1.005:1.000. We are satisfied that our process of remunerating employees in this grouping is based on skills, experience and size of role and is not tainted by structural bias on the basis of gender.</p> <p>Another focus area for us is ensuring that the right gender balance is struck in our graduate intake.</p>	
Picture of women in the report	Page 2: 4 women and 7 men staff in discussion setting	
	Page 6: A female engineer writing something	
	Page 10: 3 female and 5 male engineer	
	Page 11: A young female engineer smiling	
	Page 18: 1 female staff and 3 village women	
	Page 20: 4 working women talking	
	Page 23: several village women and staff	
Company's policies to remove the glass ceiling phenomenon	<p>Page 18: BMA Blackwater mine in Queensland, Australia, supports the Indigenous Women's Leadership Group. Our aim is to develop and sustain meaningful and trusting relationships with people impacted by, and interested in, our business.</p>	<p>Page 48: We remain committed to increasing female participation in the Accelerated Leadership Development Program to 40 per cent by the end of FY2012. Another focus area for us is ensuring that the right gender balance is struck in our graduate intake.</p>
	<p>Page 9: We remain committed to increasing female participation in the Accelerated Leadership Development Program to 40 per cent by the end of FY2012.</p>	

<p><b>The illumination of the feminist ethics of care to corporate governance</b></p>		
<p>Companies vision and mission is in line with the ethics of care</p>	<p>Page 45: Governance For BHP Billiton, sustainable development is about ensuring our business remains viable and contributes lasting benefits to society through the consideration of social, environmental, ethical and economic aspects in all that we do. Working through complex operational issues associated with our operations has highlighted environmental and social performance as a critical success factor for the Company. We are well aware of the costs of getting it wrong; but, more importantly, we recognise the value that can be created by getting it right. Consequently, we adopt a holistic approach to business strategy, seeking to realise value for our stakeholders through a sustainable business philosophy. Line managers have ultimate accountability for ensuring our businesses contribute to sustainable development. This section contains policy statements and performance requirements that apply across the HSEC disciplines. Sustainable Development Policy Statements Our Approach</p>	<p>Page 110: Our approach to governance is based on the belief that there is a link between high-quality governance and the creation of long-term shareholder value. Our view remains that governance is not just a matter for the Board and a good governance culture must be fostered throughout the organisation. Our expectations of our employees and those to whom we contract business are set out in the BHP Billiton Code of Business Conduct. BHP Billiton Governance Structure</p>
<p>Stakeholder is explicitly mentioned</p>	<p>Page 1: Only through engaging with stakeholders and careful listening can we better understand our communities. We measure how effectively we do this through perception surveys. Our community development programs focus on improving quality of life for people in our host communities.</p>	<p>Page 51: Engaging openly with our host communities, governments and other key stakeholders is critical if we are to make a positive contribution to the lives of people who live near our operations and to society more broadly. Only through meaningful engagement are we able to understand and address potential impacts and concerns about</p>

		<p>our projects and operations and create opportunities that are aligned with the interests of the affected people.</p> <p>Our stakeholders</p> <p>We define stakeholders as those who are potentially impacted by our operations, or who have an interest in what we do, or who have an influence over what we do. Our key stakeholders include: the investment community; shareholders; customers; media; business partners; employees and contractors; local and Indigenous communities; industry associations; suppliers; governments and regulators; non-government organisations (NGOs); and labour unions.</p>
	<p>Page 2: Engaging in conversations with key stakeholders</p> <p>The Forum on Corporate Responsibility meeting discussions are robust and give our Executives an insight into some of society's current priorities and a chance to understand and debate issues from a range of viewpoints.</p>	<p>Page 51: Systems to ensure dialogue is regular, ongoing and effective</p> <p>We seek to build trust with our stakeholders at the earliest possible stage of a project's life. Our Community GLD stipulates that our operations implement a stakeholder engagement management plan, which is to be in place from a project's exploration phase. The plans identify stakeholders, describe their interests and relationships and contain a range of culturally appropriate engagement activities to encourage open communication. Engagement activities vary from monthly meetings to</p>

		<p>open public forums, with topics ranging from town amenity and housing to impacts of growth and expansion projects, contractor management, security, cultural issues and social development. Our responses to concerns or complaints are recorded, as are any commitments we may make. Operations measure the effectiveness of their stakeholder engagement by conducting community perception surveys in their communities, which, since FY2010, have become mandatory every three years. These surveys provide a valuable external perspective of the quality of our engagement and whether our stakeholders believe we are doing what we say we will do.</p>
	<p>Page 2: Our stakeholders range from local community members at our operations to host governments, employees and contractors, investors, regulators, suppliers, customers and non-government organisations (NGOs).</p>	
	<p>Page 18: Engaging openly with our host communities, governments and other key stakeholders is critical if we are to make a positive contribution to the lives of people who live near our operations and to society more broadly. Only through meaningful engagement are we able to understand and address potential impacts and concerns about our projects and operations and create</p>	

	opportunities that are aligned with the interests of the affected people.	
	Page 18: BHP Billiton defines stakeholders as those who are potentially impacted by our operations, or who have an interest in what we do, or who have an influence over what we do. Our key stakeholders include: the investment community; shareholders; customers; media; business partners; employees and contractors; local and Indigenous communities; industry associations; suppliers; governments and regulators; non-government organisations (NGOs); and labour unions.	
The term "caring" and alike which are related to the feminist ethics of care principles are used	Page 7: In some communities where we operate; for example, in South Africa and Mozambique, the incidence of HIV/AIDS is among the highest in the world. We accept a responsibility to help manage the impact of the disease and to care for our employees, support the wellbeing and development of our host communities and protect the viability of our operations.	
Sustainability/CSR is explicitly mentioned to be applied	Page D: Materiality, in the sustainability context, refers to the issues and activities that are considered by our internal and external stakeholders to be the most significant and relevant to our industry, our Group and our operations. This is discussed in more detail on page 5.	

	<p>Page 1: BHP Billiton is committed to operating sustainably; it is our first value.</p> <p>Marius Kloppers, CEO</p>	
	<p>Page 1: As a globally significant producer, exporter and consumer of energy, BHP Billiton is preparing for a low carbon dioxide emissions world. We use the defined set of principles described in Our Sustainability Framework as the underlying structure for engagement with all stakeholders regarding climate change policy. Improving energy efficiency has an important role in any comprehensive greenhouse gas abatement strategy and our businesses continue to progress energy efficiency plans.</p>	
	<p>Page 1: In FY2011, we have not met our five-year targets in relation to zero fatalities, land rehabilitation index and occupational exposures. The total recordable injury frequency, while an improvement on last year, will need to improve significantly to meet the five-year target of a 50 per cent reduction by FY2012. We are on track to meet all other five-year targets, which are due to expire next year.</p>	
	<p>Page 2: By integrating sustainability concepts into our culture, policies and processes, we are able to make an enduring contribution to society.</p>	
	<p>Page 2: The most important element of sustainability in our business is the safety, health and wellbeing of people – the people working in our businesses and the people we impact in the communities within which we operate. As an organisation with diverse stakeholders and a workforce of around 100,000, including contractors, we also</p>	

	acknowledge our capacity to support our workforce to make a positive contribution to society.	
	Page 17: Managing land rehabilitation and mine closures Our Sustainability Framework outlines the key Health, Safety, Environment and Community (HSEC) performance requirements that are incorporated into the planning of development projects, through operation and into closure. Significant projects are governed by the performance requirements of our project management GLDs. HSEC risks, legislated obligations and stakeholder requirements are important inputs to the project planning and execution process.	
Feminist CSR (genuine, beyond the obligatory one) is stated to be applied	Page 45: We uphold ethical business practices and meet or, where less stringent than our standards, exceed applicable legal and other requirements.	
Legitimacy (licence to operate) or alike is mentioned	Page 14: Water has social, cultural, environmental and economic value at a local, regional, national and international level and is therefore critical to maintaining a ‘social licence to operate’. We support the priority considerations of strategic water planning, improving operational performance through effective water management, identifying conservation opportunities and promoting industry projects.	
	Page 44: All assets and projects must implement community development management plans which are designed to ensure a contribution is made to the livelihoods of people in host communities and the Group’s licence to operate is enhanced.	

<p>The practices necessary to maintain confidence in the company's integrity (from ASX)</p>	<p>Page 1: Respect and integrity are fundamental values at BHP Billiton and success is when our communities, customers and suppliers value their relationship with us.</p>	
<p>The practices necessary to take into account the legal obligations and the reasonable expectations of the stakeholders (shareholders, employees, customers, suppliers, creditors, consumers and the broader community in which they operate) (From ASX)</p>	<p>Page 26: We also now prohibit the making of facilitation payments, which are payments involving small sums to low-level government officials to obtain routine services to which BHP Billiton is otherwise legally entitled. An internal investigation is continuing into allegations of possible misconduct involving interactions with government officials. Following requests for information from the US Securities and Exchange Commission, the Group has disclosed to relevant authorities evidence that it has uncovered regarding possible violations of applicable anti-corruption laws involving interactions with government officials. The Group is continuing to cooperate with the relevant authorities. It is not possible at this time to predict the scope or duration of the investigation or its likely outcomes.</p>	<p>Page 160: Legal proceedings Rio Algom Pension Plan In June 2003, Alexander E. Lomas, a retired member of the Pension Plan for Salaried Employees of Rio Algom Mines Limited (Plan), filed a Notice of Application in a representative capacity in the Ontario Superior Court of Justice Commercial List against Rio Algom Limited (RAL) and the Plan Trustee alleging certain improprieties in their administration of the Pension Plan and use of Pension Plan funds from January 1966 onward.</p>
		<p>Page 160: Class actions concerning Cerrejón privatisationThe non-government organisation, Corporación ColombiaTransparente (CCT), brought three separate class actions (PopularActions 1,029, 1,032 and 1,048) against various defendants inconnection with the privatisation of 50 per cent of the Cerrejón Zona Norte mining complex in Colombia in 2002. Actions 1,029and 1,048 were dismissed leaving only the</p>

		<p>action against Cerrejón Zona Norte SA (CZN). The mining complex is currently owned by CZN and Carbones del Cerrejón Limited (CDC). Our subsidiary Billiton Investment 3 BV owns a 33 per cent share in CDC, and our subsidiaries Billiton Investment 3 BV and Billiton Investment 8 BV (BHP Billiton Shareholders) collectively own a 33.33 per cent share in CZN.</p>
		<p>Page 161: Australian Taxation Office assessments  The Australian Taxation Office (ATO) issued amended assessments in prior years denying bad debt deductions arising from the investments in Beenup and Boodarie Iron and the denial of capital allowance claims made on the Boodarie Iron project. The Group challenged the assessments and was successful on all counts before the Full Federal Court. The ATO obtained special leave in September 2010 to appeal to the High Court in respect of the denial of capital allowance claims made on the Boodarie Iron project. The Group's position in respect of the capital allowance claims on the Boodarie Iron project was confirmed by the High Court in June 2011. As a result of these appeals, US\$138 million was released from the Group's income</p>

		tax provision in September 2010 and US\$580 million in June 2011.
A clear commitment by the board and senior executives to the code of conduct		<p>Page 53: Reporting transparently and behaving ethically</p> <p>Founded on Our Charter values, the Code of Business Conduct represents our unqualified commitment to uphold ethical business practices. The Code of Business Conduct sets standards of behaviour for how we should work. In following these standards our people can be confident they are working in the right way.</p>
Description of the company's approach to any moral dilemmas	<p>Page 26: Anti-corruption</p> <p>Regardless of the country or culture within which our people work, the Code of Business Conduct prohibits corrupt practices to further BHP Billiton's goals. The Code of Business Conduct requires appropriate due diligence in selecting and engaging third parties, the maintenance of accurate and reasonably detailed records of expenditures, and the implementation and maintenance of specific approval requirements for corruption sensitive transactions.</p> <p>We also now prohibit the making of facilitation payments, which are payments involving small sums to low-level government officials to obtain routine services to which BHP Billiton is otherwise legally entitled.</p>	<p>Page 128: Business Conduct Advisory Service</p> <p>We have established a Business Conduct Advisory Service so that employees can seek guidance or express concerns on business-related issues and report cases of suspected misappropriations, fraud, bribery or corruption. Reports can be made anonymously and without fear of retaliation. Arrangements are in place to investigate such matters. Where appropriate, investigations are conducted independently. Levels of activity and support processes for the Business Conduct Advisory Service are monitored with activity reports presented to the Board.</p> <p>Further information on the</p>

		Business Conduct Advisory Service can be found in the Code of Business Conduct.
		Page 53: Anti-corruption Regardless of the country or culture within which our people work, the Code of Business Conduct prohibits corrupt practices to further BHP Billiton's goals. The Code of Business Conduct requires appropriate due diligence in selecting and engaging third parties, the maintenance of accurate and reasonably detailed records of expenditures and the implementation and maintenance of specific approval requirements for corruption sensitive transactions. We also now prohibit the making of facilitation payments, which are payments involving small sums to low-level government officials to obtain routine services to which we are otherwise legally entitled.
b. Detail of the company's responsibilities to shareholders and the financial community generally	<p>Page 5: Identifying our sustainability issues We identify the sustainability issues included in this Report through our three-step materiality process. Step one of the process includes identifying issues by reviewing our internal risk registers, requests from our shareholders and investors, daily print media coverage and an independent review of issues raised by non-government organisations (NGOs) and global electronic and print media. Step two involves rating the significance of these issues to our stakeholders and the</p>	<p>Page 111: Shareholder engagement The Board represents the Group's shareholders and is accountable to them for creating and delivering value through the effective governance of the business. The Board has developed a strategy for engaging and communicating with shareholders, key aspects of which are outlined below. Shareholders vote on important matters affecting the business, including the election of</p>

	<p>potential impact on our business as low, medium or high.</p>	<p>Directors, changes to our constitutional documents, the receipt of annual financial statements and incentive arrangements for Executive Directors.</p>
	<p>Page 15: BHP Billiton chose to participate in the inaugural CDP Water Disclosure Project in FY2010. An initiative of the Carbon Disclosure Project, the CDP Water Disclosure Project seeks to provide water-related data from the world's largest corporations to the investor community. The goal is to help participating companies further understand their water use and water risks. It is also intended to give business leaders greater insight into the corporate risks associated with water and ways in which these risks are being addressed.</p>	<p>Page 6: Net attributable profit (excluding exceptional items) of US\$21.7 billion was up 74 per cent, with net operating cash flows of US\$30 billion and an underlying return on capital of 39 per cent. During the year, we invested about US\$18 billion in growth and exploration activities and returned US\$15 billion to shareholders in dividends and capital returns. More recently, we committed US\$15 billion to acquire additional tier one shale assets.</p>
		<p>Page 55: Equalisation of economic and voting rights BHP Billiton Limited shareholders and BHP Billiton Plc shareholders have economic and voting interests in the combined BHP Billiton Group. The economic and voting interests represented by a share in one company relative to the economic and voting interests of a share in the other company is determined by reference to a ratio known as the 'Equalisation Ratio'. Presently, the economic and voting interests attached to each</p>

		<p>BHP Billiton Limited share and each BHP Billiton Plc share are the same, since the Equalisation Ratio is 1:1. The Equalisation Ratio would change if either BHP Billiton Limited or BHP Billiton Plc returned value to only its shareholders and no matching action were taken.</p>
		<p>Page 58: Right on a return of assets on liquidation  On a return of assets on liquidation of BHP Billiton Limited, the assets of BHP Billiton Limited remaining available for distribution among shareholders, after giving effect to the payment of all prior ranking amounts owed to all creditors and holders of preference shares, shall be applied in paying to the holders of the BHP Billiton Limited Special Voting Share and the Equalisation Share (if any) an amount of up to A\$2.00 on each such share, on an equal priority with any amount paid to the holders of BHP Billiton Limited ordinary shares, and any surplus remaining shall be applied in making payments solely to the holders of BHP Billiton Limited ordinary shares in accordance with their entitlements.</p>

<p>c. Specifications of the company's responsibilities to shareholders, employees, customers, suppliers, creditors, consumers and the broader community</p>	<p>Page 2: Our operations are required to have stakeholder engagement management plans, in accordance with the Community Group Level Document (GLD), that include stakeholder identification and analysis and a plan of consultation activities that address the specific needs of different stakeholders. The stakeholder engagement management plans may comprise a range of engagement activities, from regular meetings of community consultative committees and special interest groups, to one-off visits to our facilities and open public meetings. Community engagement activities aim to be socially inclusive by involving disadvantaged and vulnerable groups.</p>	
	<p>Page 3: Requirements for contractors, suppliers and products  Our contractors and suppliers have requirements in their contracts consistent with The BHP Billiton Code of Business Conduct and Health, Safety, Environment and Community GLDs.  Requirements for suppliers cover a number of human rights, including labour rights, humane treatment of employees and living wage.  All contracted suppliers are segmented into global and local categories, based on their sustainability risk, and a procedure to engage with each supplier is developed appropriate to this risk.</p>	
	<p>Page 11: In FY2011, each employee received an average of 62 hours of training. Training and development programs are designed and implemented at the local operational level to support local requirements. BHP Billiton operations include health and safety</p>	

	<p>training and training on Our Charter and the Code of Business Conduct as part of the mandatory induction process for all employees and permanent contractors.</p>	
<p>d. Description of the company's approach to the community (including environmental protection policies, support for community activities, and donation of sponsorship policies)</p>	<p>Page 6: The best investment we can make in any community is to ensure our people return home safe and well at the end of each day. In the current climate of rapid growth, managing the impacts of that growth on the safety and wellbeing of our people is critical.</p>	<p>Page 52: Community development Our community development programs are driven by our desire to improve the quality of life of people in our host communities. Our operations implement their programs using community development plans that have been developed in consultation with local stakeholders. The plans are formulated from data gathered from an impacts and opportunities assessment and a baseline social study that includes education, health and environment quality of life indicators. The requirement that this occurs in all our operations is part of the implementation of GLDs. Community development projects are selected on the basis of their capacity to impact positively on the quality of life indicators. We monitor progress by tracking changes in these indicators every three years. All community projects are assessed in relation to anti-corruption requirements prior to approval and are implemented in accordance with the</p>

		<p>ethical requirements in the Code of Business Conduct. This approach is mandated under the Community GLD.</p>
	<p>Page 9: Recognising innovative ideas  Our annual Health, Safety, Environment and Community (HSEC) Awards provide us with a way of recognising the contribution made by our employees to the care of our fellow employees, the community and the environment.</p>	<p>Page 53: Making a positive contribution to society continued  During FY2011, our voluntary community investment totalled US\$195.5 million, comprising cash, in-kind support and administrative costs and included a US\$30 million contribution to our UK-based charitable company, BHP Billiton Sustainable Communities.  The cash component of our FY2011 community investment of US\$149.1 million comprises:</p> <ul style="list-style-type: none"> <li>• direct investment in community programs made from BHP Billiton companies on an equity share basis;</li> <li>• contributions to the Group’s charitable foundations, excluding BHP Billiton Sustainable Communities;</li> <li>• the Enterprise Development and Socio-economic Development components of our Broad-Based Black Economic Empowerment programs in South Africa.</li> </ul> <p>Local procurement  Due to the scale of our operations, we create a strong demand for products and services. We recognise the potential benefit that supporting local businesses to meet this demand can</p>

		<p>bring to our host communities and regions. Our approach is to source locally if a product or service that meets our requirements is available locally.</p>
	<p>Page 23: During FY2011, our voluntary community investment totalled US\$195.5 million, comprising cash, in-kind support and administrative costs and included a US\$30 million contribution to our UK-based charitable company, BHP Billiton Sustainable Communities. Our expenditure on community programs during the year was significantly higher than our expenditure in FY2010.</p>	<p>Page 89: Health, safety, environment and community  We are subject to extensive regulation surrounding the health and safety of our people and the environment. We make every effort to comply with the regulations and, where less stringent than our standards, exceed applicable legal and other requirements. However, regulatory standards and community expectations are constantly evolving. As a result, we may be exposed to increased litigation, compliance costs and unforeseen environmental rehabilitation expenses, despite our best efforts to work with governments, community groups and scientists to keep pace with regulations, law and public expectations.</p>

	<p>Page 15: Managing wastewater and related waste Mining operations produce large quantities of mineral waste that may include waste rock, tailings and slag, which need to be effectively managed to control potential environmental impacts. Our operations have waste management plans to minimise the waste generated and mitigate its impact, in accordance with the Environment GLD, which also stipulates that operations monitor transport and disposal of waste to ensure regulatory requirements are met throughout the waste cycle.</p>	<p>Page 52: Community development Our community development programs are driven by our desire to improve the quality of life of people in our host communities. Our operations implement their programs using community development plans that have been developed in consultation with local stakeholders. The plans are formulated from data gathered from an impacts and opportunities assessment and a baseline social study that includes education, health and environment quality of life indicators. The requirement that this occurs in all our operations is part of the implementation of GLDs. Community development projects are selected on the basis of their capacity to impact positively on the quality of life indicators. We monitor progress by tracking changes in these indicators every three years. All community projects are assessed in relation to anti-corruption requirements prior to approval and are implemented in accordance with the ethical requirements in the Code of Business Conduct. This approach is mandated under the Community GLD.</p>
	<p>Page 16: Our approach to biodiversity and land management We take a holistic approach to managing land and biodiversity, which means we assess and manage the potential impacts of our operations throughout their life cycle, across social, environmental</p>	<p>Page 85: Community – We continue to invest one per cent of our pre-tax profits in community programs, based on the average of the previous three years' pre-tax profit publicly reported</p>

	<p>and economic spheres. We have minimum requirements of all BHP Billiton operations that include adhering to a formal hierarchy process that begins with avoiding disturbance, followed by mitigating negative impacts, rehabilitating the environment and undertaking compensatory actions.</p>	<p>in each of those years. During FY2011, our voluntary investment totalled US\$195.5 million comprising cash, in-kind support and administrative costs and includes a US\$30 million contribution to BHP Billiton Sustainable Communities.</p>
<p>f. Outline of the company's employment practices (including reference to OHS, employment opportunity practices, special entitlements above the statutory minimum, employee security trading policies, training and further education support policy, practices on drug and alcohol usage and policies on outside employment)</p>	<p>Page 1: The safety and health of our people is core to every aspect of our business. Tragically, we lost two colleagues at BHP Billiton controlled operations during FY2011. We extend our sympathy to their families, friends and colleagues. We are accountable for each employee returning home safely at the end of each working day.</p>	<p>Page 48: Approach to local employment  Recruitment is managed on a local basis by each CSG, Minerals Exploration, Marketing and Group Functions.  Mandatory Group-wide performance requirements contained in our GLD stipulate recruitment standards and ensure candidates possess the appropriate skills, experiences, capability and values.  The remote locations within which we operate and the limited numbers of appropriately skilled employees can result in the need for operations to employ staffs, who work on-site, but reside outside the community; generally known as fly in, fly out staff. A workforce of this kind can create challenges and opportunities and we continue to address the impact on our people, as well as local community concerns, so that together we can identify ways in which our operations can make a</p>

		positive and meaningful impact.
	<p>Page 2: We facilitate opportunities for our employees to assist others through arrangements such as our Matched Giving Program, where employees' charitable efforts, including cash, fundraising and volunteer hours to not-for-profit and community organisations, are matched with a dollar-for-dollar donation by the Group.</p>	<p>Page 49: Employing and developing our people continued  Fostering mutually beneficial employee relations  Relationships with all our stakeholders, including our employees, are built on trust, which we regard as a key aspect of Our Charter value of respect.  The breadth and geographic diversity of BHP Billiton means we have a mix of collective and individually regulated employment arrangements. We work closely with contracting companies to encourage them to ensure that their employee relations are governed in a manner consistent with Our Charter.</p>
	<p>Page 9: Recognising innovative ideas  Our annual Health, Safety, Environment and Community (HSEC) Awards provide us with a way of recognising the contribution made by our employees to the care of our fellow employees, the community and the environment.</p>	<p>Page 49: Employing and developing our people continued  Fostering mutually beneficial employee relations  Relationships with all our stakeholders, including our employees, are built on trust, which we regard as a key aspect of Our Charter value of respect.  The breadth and geographic diversity of BHP Billiton means we have a mix of collective and individually regulated</p>

		<p>employment arrangements. We work closely with contracting companies to encourage them to ensure that their employee relations are governed in a manner consistent with Our Charter.</p>
	<p>Page 10: Approach to local employment Recruitment is managed on a local basis by each Customer Sector Group, Minerals Exploration, Marketing and the Group Functions. Mandatory Group-wide performance requirements contained in our Group Level Documents (GLDs) stipulate recruitment standards and ensure candidates possess the appropriate skills, experiences, capability and values. In FY2011, there were local employment policies in place at the asset level. Fifty-eight per cent of our workforce and 27 per cent of management* were drawn from the local** community. The remote locations within which we operate and the limited numbers of appropriately skilled employees can result in the need for operations to employ staff, who work on-site, but reside outside the community; generally known as fly in, fly out staff.</p>	<p>Page 49: Under Australian law, employees are entitled to take industrial action on the expiry of applicable industrial agreements, which is protected from challenge. Given this legislative exposure to potential industrial action, we develop comprehensive contingency plans to ensure that our operations experience as little disruption as possible. In instances where we do encounter industrial disruption, our aim is to minimise the impact on our customers in line with our commitment to shareholders and, above all, to avoid compromising the safety of our employees and contractors.</p>
	<p>Page 40: People BHP Billiton is committed to harnessing the unique skills, experience and perspectives that each individual brings, recognising that these differences are important to our success as a company. The safety, health and wellbeing of our employees, contractors and the communities in which we operate is central to the success of our business. The acute and immediate nature of serious accidents makes it easy for us to focus on them; however, the long-term disabilities</p>	

	<p>associated with chronic exposure to health risks are equally serious. We are committed to reducing the potential for these exposures within our workplaces. Significant community-based health risks (for example, HIV/AIDS, tuberculosis and malaria) also exist in our businesses and we contribute to the ongoing management of these issues. Fitness for work is an important area of employee health. We have developed drug, alcohol and fatigue management programs at our operations to minimise risks associated with these health issues.</p>	
	<p>Page 10: In FY2011, there were local employment policies in place at the asset level. Fifty-eight per cent of our workforce and 27 per cent of management* were drawn from the local** community. The remote locations within which we operate and the limited numbers of appropriately skilled employees can result in the need for operations to employ staffs, who work on-site, but reside outside the community; generally known as fly in, fly out staff. A workforce of this kind can create challenges and opportunities and we continue to address the impact on our people, as well as local community concerns, so that together we can identify ways in which our operations can make a positive and meaningful impact.</p>	
	<p>Page 11: Our two-year Foundations for Graduates Program have been recognised as a leader in the field and have been designed specifically for graduates from tertiary institutions. Our aim is for our graduates to build a long and successful career with BHP Billiton. Each year, we recruit approximately 400 graduates in meaningful business roles, who</p>	

	each have the opportunity to work across teams, businesses and geographic regions.	
The company's organisational structure support for the commitment to maintain relationship	<p>Page 3: Applying our sustainability approach</p> <p>The systems that support our Sustainable Development Policy are in line with our wider corporate governance processes.</p> <p>The Sustainability Committee of the BHP Billiton Board continues to oversee this Policy.</p> <p>Management is accountable for sustainability-related processes and performance.</p>	<p>Page 47: We conduct regular internal audits to test compliance with the requirements of the GLDs. Audits are led by professional audit managers and supported by experienced personnel drawn from across the organisation. Audit results are used by management to create detailed action plans where the businesses have not yet achieved full compliance with the requirements. Key findings are reported to senior management and summary reports are considered by the Sustainability Committee of the Board. The Sustainability Committee of the Board also oversees risks specific to BHP Billiton's performance in the areas of health, safety, environment and community.</p>
		Page 110: BHP Billiton Governance Structure
		Meeting: RAC:9, Remuneration: 8, Sustainability: 7
		<p>Page 120: Role and focus</p> <p>The role of the RAC is to assist the Board in monitoring the decisions and actions of the CEO and the Group and to gain assurance that progress is</p>

		<p>being made towards the corporate objective within the CEO limits. The RAC undertakes this</p> <p>by overseeing:</p> <ul style="list-style-type: none"> <li>• the integrity of the financial statements;</li> <li>• the appointment, remuneration, qualifications, independence and performance of the External Auditor and the integrity of the audit process as a whole;</li> <li>• the performance and leadership of the internal audit function;</li> <li>• the effectiveness of the systems of internal controls and risk management;</li> <li>• compliance with applicable legal and regulatory requirements;</li> <li>• compliance by management with constraints imposed by the Board.</li> </ul>

<p>Description of the company's approach to business courtesies, bribes, facilitation payments, inducements and commissions</p>	<p>Page 26: Anti-corruption Regardless of the country or culture within which our peoplework, the Code of Business Conduct prohibits corrupt practicesto further BHP Billiton’s goals. The Code of Business Conductrequires appropriate due diligence in selecting and engagingthird parties, the maintenance of accurate and reasonablydetailed records of expenditures, and the implementation andmaintenance of specific approval requirements for corruptionsensitive transactions.We also now prohibit the making of facilitation payments,which are payments involving small sums to low-levelgovernment officials to obtain routine services to whichBHP Billiton is otherwise legally entitled.An internal investigation is continuing into allegations ofpossible misconduct involving interactions with governmentofficials. Following requests for information from the US Securitiesand Exchange Commission, the Group has disclosed to relevantauthorities evidence that it has uncovered regarding possibleviolations of applicable anti-corruption laws involvinginteractions with government officials. The Group is continuingto cooperate with the relevant authorities. It is not possibleat this time to predict the scope or duration of the investigationor its likely outcomes.</p>	
<p>Statement of the measures the company follows to promote active compliance with legislation affecting its operations wherever it operates</p>	<p>Page D: BHP Billiton’s mandatory Health, Safety, Environment and Community (HSEC) performance requirements are prescribed in our Group Level Documents (GLDs) and the process of implementing the GLDs across the Group continues. All our businesses are committed to this implementation process; however, compliance with all the</p>	<p>Page 47: We conduct regular internal audits to test compliance with the requirements of the GLDs. Audits are led by professional audit managers and supported by experienced personnel drawn from across the organisation. Audit results are used by</p>

	<p>requirements is not yet in place at every operation. Our Sustainability Framework on page 39 provides a summary of the key performance requirements from the HSEC GLDs.</p>	<p>management to create detailed action plans where the businesses have not yet achieved full compliance with the requirements. Key findings are reported to senior management and summary reports are considered by the Sustainability Committee of the Board. The Sustainability Committee of the Board also oversees risks specific to BHP Billiton's performance in the areas of health, safety, environment and community.</p>
	<p>Page 3: We conduct regular internal audits to test compliance with the requirements of the GLDs. Audits are led by professional audit managers and supported by experienced personnel drawn from across the organisation. Audit results are used by management to create detailed action plans where the businesses have not yet achieved full compliance with the requirements. Key findings are reported to senior management and summary reports are considered by the Sustainability Committee of the Board. Risks specific to BHP Billiton's performance in the areas of health, safety, environment and community are also overseen by the Sustainability Committee of the Board.</p>	<p>Page 50: Within Australia, in compliance with the national Energy Efficiency Opportunities (EEO) Act 2006, we also implemented a number of energy efficiency measures. We continue to track progress against our US\$300 million commitment to support the implementation of energy efficiency and low GHG emission technologies. To date, we have exceeded our commitment, with US\$325 million worth of projects in implementation stages.</p>
	<p>Page 26: Transparently reporting taxes We support the Extractive Industries Transparency Initiative (EITI), an international initiative dedicated to the enhancement of transparency around the payments of taxes and royalties derived from resource development. In line</p>	<p>Page 129: Section 303A of the NYSE Listed Company Manual has instituted a broad regime of corporate governance requirements for NYSE-listed companies. Under the NYSE rules, foreign private issuers, such as</p>

	<p>with our support for the EITI, we have reported this data on a country-by-country basis and we have also broken the data down into the taxes and royalty payments that we make as BHP Billiton (e.g. corporate income taxes and royalties) and those that we collect on behalf of employees.</p>	<p>ourselves, are permitted to follow home country practice in lieu of the requirements of Section 303A, except for the rule relating to compliance with Rule 10A-3 of the Securities Exchange Act of 1934 and certain notification provisions contained in Section 303A of the Listed Company Manual.</p>
<p>Specification of how the company handles actual or potential conflicts of interest</p>	<p>Page 10: In FY2011, there was one labour strike in one of our operations in South Africa of more than one week's duration. In line with our employee relations approach, we believe that ensuring our employees are directly engaged with the business and aligned with business goals is the most effective way of avoiding any form of industrial action.</p>	<p>Page 51: Resolving complaints Our operations are currently implementing local-level processes to facilitate resolution of complaints and grievances as required by our Community GLD. As part of this process, all complaints and grievances are required to be acknowledged, documented and investigated. Appropriate remedial actions are undertaken where a complaint is legitimate, complainants are promptly advised of the remedial action and outcomes are documented. More robust processes are to be established in countries with high levels of corruption or conflict.</p>
	<p>Page 19: Resolving complaints Our operations are currently implementing local-level processes to facilitate resolution of complaints and grievances, as required by our Community GLD. As part of this process, all complaints and grievances are required to be acknowledged, documented and investigated. Appropriate</p>	<p>Page 12: We provide for operational closure and site rehabilitation. Our operating and closed facilities are required to have closure plans. Changes in regulatory or community expectations may result in the relevant plans not being adequate. This</p>

	<p>remedial actions are undertaken where a complaint is legitimate, complainants are promptly advised of the remedial action and outcomes are documented. More robust processes are to be established in countries with high levels of corruption or conflict.</p>	<p>may impact financial provisioning and costs at the affected operations.</p>
	<p>Page 21: Conflict resolution training of subcontractors at our Guinea Alumina Corporation (33 per cent owned), in west Africa.</p>	<p>Page 51: Managing land rehabilitation and mine closures Our Sustainability Framework in the Appendix of our 2011 Sustainability Report outlines the key Health, Safety, Environment and Community performance requirements that are incorporated into the planning of development projects, through operation and into closure. Significant projects are governed by the performance requirements of our project management GLDs. HSEC risks, legislated obligations and stakeholder requirements are important inputs to the project planning and execution process.</p>
	<p>Page 38: Business conduct We have in place mechanisms to address stakeholder grievances and concerns. BHP Billiton operations maintain a register of concerns, complaints and relevant external communications. The confidential Business Conduct Advisory Service provides a further means for raising issues such as harassment, conflict of interest or fraud.</p>	<p>Page 51: Once in operation, our assets undertake annual life of asset planning, a process that incorporates all aspects of the business. In FY2011, detailed closure planning requirements were integrated into the Directional Planning GLD, with each asset required to develop a closure plan as part of their life of asset plan. In addition, a new audit process was implemented focusing on closure planning,</p>

		<p>cost estimation and closure valuation at operating assets.</p> <p>We are responsible for a number of legacy operations that are in various stages of decommissioning, rehabilitation or post-closure care and maintenance. The HSEC audit program covers the activities of these closed operations. Closure plans provide the basis for estimating the financial costs of closure and the associated accounting closure and rehabilitation provisions. Information on our closure and rehabilitation provisions can be found in note 18 'Provisions' of the attached financial statements.</p>
	<p>Page 19: Resolving complaints</p> <p>Our operations are currently implementing local-level processes to facilitate resolution of complaints and grievances, as required by our Community GLD. As part of this process, all complaints and grievances are required to be acknowledged, documented and investigated. Appropriate remedial actions are undertaken where a complaint is legitimate, complainants are promptly advised of the remedial action and outcomes are documented. More robust processes are to be established in countries with high levels of corruption or conflict.</p> <p>In FY2011, the highest number of complaints across the Group was registered at the Mt Arthur Coal operation, in NSW, Australia. Through its community</p>	

	<p>enquiries line, the mine recorded 77 complaints from 31 near neighbours and residents predominantly about noise, dust and blasting operations.</p> <p>With four other mines operating around Muswellbrook, blasting, noise and the cumulative impacts of multiple mines will continue to present the greatest challenges in the future.</p>	
	<p>Page 17: Managing land rehabilitation and mine closures</p> <p>Our Sustainability Framework outlines the key Health, Safety, Environment and Community (HSEC) performance requirements that are incorporated into the planning of development projects, through operation and into closure. Significant projects are governed by the performance requirements of our project management GLDs. HSEC risks, legislated obligations and stakeholder requirements are important inputs to the project planning and execution process.</p>	
<p>Identification of the measures the company follows to encourage the reporting of unlawful or unethical behaviour</p>	<p>Page 25: We recognise that at times our people may find themselves in situations where complying with the Code of Business Conduct may appear to conflict with the ability to win or retain business. The Code of Business Conduct makes it clear that no employee may allow anything – meeting production, competitive instincts or even a direct order from a manager – to compromise the commitment to working with integrity.</p> <p>To ensure the requirements of the Code of Business Conduct are effectively communicated across BHP Billiton, each business leader has the responsibility for ensuring that all employees and agency contractors attend an annual face-to-face meeting to discuss the Code. A training and</p>	<p>Page 122: The RAC is responsible for the oversight of risk management and reviews the internal controls and risk management systems. In undertaking this role the RAC reviews the following:</p> <ul style="list-style-type: none"> <li>• procedures for identifying business and operational risks and controlling their financial impact on the Group and the operational effectiveness of the policies and procedures related to risk and control;</li> <li>• budgeting and forecasting systems, financial reporting systems</li> </ul>

	communication plan for each business and function is completed and executed each year. Business leaders report against these requirements on an annual basis and retain records of training undertaken.	and controls; • policies and practices put in place by the CEO for detecting, reporting and preventing fraud and serious breaches of business conduct and whistle-blowing procedures;
<b>The illumination of the feminist ethics of care to social and environmental risk</b>		
The explanation of social and environmental risk exposed by companies	Page 12: As a global organisation operating in an energy intensive industry, we are committed to manage the risks associated with climate change.	Page 11: Risk factors Health, safety, environmental and community incidents or accidents and related regulations may adversely affect our operations and reputation or licence to operate We are a major producer of carbon-related products such as energy and metallurgical coal, oil, gas, and liquefied natural gas. Our oil and gas operations are both onshore and offshore. The nature of the industries in which we operate means that many of our activities are highly regulated by health, safety and environmental laws. As regulatory standards and expectations are constantly developing, we may be exposed to increased litigation, compliance costs and unforeseen environmental rehabilitation expenses. Potential health, safety, environmental and community events that may have a material

		<p>adverse impact on our operations include rock fall incidents in underground mining operations, aircraft incidents, light vehicle incidents, well blowouts, explosions or gas leaks, incidents involving mobile equipment, uncontrolled tailings breaches, escape of polluting substances, uncontrolled releases of hydrocarbons, human rights breaches and community protests or civil unrest.</p>
	<p>Page 12: We recognise that we have a social and economic responsibility to constructively engage on climate change issues. By understanding the risks and opportunities around climate change, and how these affect our organisation, we believe we can reduce our own impact on the environment and make a positive international contribution to the issue.</p> <p>The potential impacts to our organisation</p> <p>Our energy-intensive operations and fossil fuel products are exposed to potential financial risks from regulations to control greenhouse gas (GHG) emissions. In the medium and long term, we are likely to see changes in the profit margins of our GHG-intensive assets as a result of regulatory impacts in the countries where we operate. These regulatory mechanisms may impact our operations directly or indirectly via our customers. Inconsistency of regulations, particularly between developed and developing countries, may also affect the investment attractiveness of assets in different jurisdictions.</p>	<p>Page 12: Climate change and greenhouse effects may adversely impact our operations and markets. Carbon-based energy is a significant input in a number of the Group's mining and processing operations and we have significant sales of carbon-based energy products.</p> <p>A number of governments or governmental bodies have introduced or are contemplating regulatory change in response to the impacts of climate change. The physical impacts of climate change on our operations are highly uncertain and will be particular to the geographic circumstances.</p> <p>These may include changes in rainfall patterns, water shortages, rising sea levels, increased storm intensities and higher average temperature levels. These effects may adversely impact the</p>

	<p>Potential physical impacts of climate change include more extreme weather events. These present risks to our personnel, as well as a loss of business continuity, production interruption and damaged or lost facilities. Sea level changes may also impact access to ports, a significant issue for many of our assets. Changes in rainfall are particularly relevant to the mining industry, where water is a critical resource. These changes vary regionally and may involve extended drought or increased flooding.</p>	<p>productivity and financial performance of our operations. A breach of our governance processes may lead to regulatory penalties and loss of reputation</p> <p>We operate in a global environment straddling multiple jurisdictions and complex regulatory frameworks. Our governance and compliance processes, which include the review of internal control over financial reporting, may not prevent future potential breaches of law, accounting or governance practice. The BHP Billiton Code of Business Conduct, together with our anti-bribery and corruption, and anti-trust standards may not prevent instances of fraudulent behaviour and dishonesty nor guarantee compliance with legal or regulatory requirements. This may lead to regulatory fines, litigation, loss of operating licences or loss of reputation.</p>
<p>The steps taken to mitigate the social and environmental risk are described</p>	<p>Page 13: We take an active role in climate change policy development in the key regions where we operate and market our products. We analyse and compare the various policy options by evaluating the degree to which they meet a defined set of principles: clear price signal; revenue neutral; trade friendly; broad-based, predictable and gradual; simple and effective. See Our Sustainability Framework on page 42. We have actively engaged with the Australian Government</p>	

	<p>as it develops its climate change policy response. In addition to recommending a policy approach that is consistent with our principles, we propose that an effective strategy for minimising Australia's exposure to a future global carbon price includes avoiding the construction of new long-life, carbon emissions intensive assets where affordable low-carbon alternatives are available, especially in the power and building sectors.</p>	
	<p>Page 27: Risk management plans are established to assess, control and monitor material risks issues. In FY2011, BHP Billiton increased the emphasis on establishing performance standards for material risk critical controls and ensuring these standards are effectively implemented through a Group Management Committee key performance indicator (KPI). The KPI stipulates that individual BHP Billiton assets develop performance standards for safety-related material risks. The objectives of the risk assessment process are to understand the nature and tolerance of the material risk issues for the Group and ensure material risks are well controlled through the development and monitoring of critical controls.</p>	
<p><b>Company's comments on its Sustainability Reporting</b></p>	<p>Page 3: A key element of our Sustainable Development Policy is to regularly review our performance and publicly report our progress. This Report is an example of our approach to stakeholder engagement, accountability and transparency. The Report also serves as a public reference, providing a collation of performance data and statements</p>	<p>Page 47: Identifying our sustainability issues We identify the sustainability issues that are included in our Sustainability Report through our three-step materiality process. Step one of the process includes identifying issues by reviewing our</p>

	<p>of key issues and related management approaches.</p>	<p>internal risk registers, requests from our shareholders and investors, daily print media coverage and an independent review of issues raised by non-government organisations and global electronic and print media. Step two involves rating the significance of these issues to our stakeholders and the potential impact on our business as low, medium or high. Our third step is to review the issues and seek feedback. One of the ways we do this is through our Forum on Corporate Responsibility. We also ask our HSEC leaders in each of our CSGs to review the issues assign ratings and advise of any gaps. The issues are provided to the Sustainability Committee of the Board and reviewed throughout the preparation of the Sustainability Report. Common themes for a number of material issues were grouped together into focus areas for the purpose of the Report.</p>
	<p>Page 25: Reporting transparently and behaving ethically Wherever we operate in the world we work with integrity  – making the right decisions and doing things the right way.  We care as much about how results are achieved as we do about the results themselves.</p>	