

**Bringing them together: Integrating economic and social-
ecological dimensions in corporate decision-making**

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Thesis Presented for the Degree of

DOCTOR OF PHILOSOPHY

In the Department of Commerce at the Graduate School of Business

UNIVERSITY OF CAPE TOWN

25 November 2016

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*“I have always endeavoured
to listen to what each and every person in a discussion had to say
before venturing my own opinion. Oftentimes, my own opinion will simply represent a
consensus of what I heard in the discussion.”*

Nelson Mandela

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Abstract

The integration of economic, social and environmental dimensions is essential for corporate sustainability. Integration requires that there be no *a priori* priority among these dimensions. Economic priorities, however, often dominate decision-making processes in for-profit organisations. This thesis asks *how do organisations integrate predominant economic dimensions, on the one hand, and social-ecological dimensions, on the other?* The question is focused on the middle management level, where relatively little is known about how competing organisational aspects are integrated. The study addresses a gap in theory relating to tensions in corporate sustainability by drawing on paradox, organisational ambidexterity and organisational identity literatures. The case study explored the research question from the lived experience of purposefully sampled research participants in a century-old mining company. The study focused on the integration of economic and social-ecological (E&SE) dimensions in the cross-functional decision-making process where mining projects are developed. Findings from the inductive analysis before and after the introduction of an intentional integration process revealed five dimensions of differentiation that were further explored. The analysis culminated in a process model of E&SE integration. I argue that E&SE integration on the middle management level is characterised by tensions between competing, interrelated priorities that constrain integration. Notwithstanding organisational commitment to corporate sustainability and E&SE integration, failure to manage these tensions perpetuates unsustainable outcomes in decision-making processes. The overarching contribution to corporate sustainability literature is a process model of E&SE integration on the middle management level that addresses the tensions that constrain integration. Integration is enabled by *suspending premature convergence* on a single option and by *bringing social-ecological dimensions to the forefront* in order to explore how E&SE dimensions are interdependent, before making binding choices. The study contributes to organisational ambidexterity literature by showing how the integration of strategic priorities on the middle management level is distinct from integration on the senior management level with respect to the quality of the decision and the locus of integration. The study also contributes to an emerging scholarly conversation regarding organisational purpose by identifying how reframing purpose into an integrative metaframe can enable commitment to an integrated decision-making process.

Acknowledgements

“After climbing a great hill, one only finds that there are many more hills to climb” (Nelson Mandela). This page is dedicated to all those who inspired, encouraged, helped and funded me along the *journey of a thousand hills*.

This thesis is the result of a formidable journey, in response to an answered prayer. The journey involved much perseverance through beautiful and daunting mountain passes and uncharted territory. I would like to thank everyone mentioned and not mentioned, who contributed to this journey. Thank you to my supervisors, Ralph Hamann and Arnold Smit, without whom this journey and the opportunities it presented would not have been possible, and whose feedback helped shape my understanding. Thank you to Tima Bansal for inviting me to visit Richard Ivey Business School. The impact of this visit lingers on. Thank you to my family, my church-family and my friends whose love, encouragement and prayers lifted me when the hills ahead seemed daunting. Thank you to my husband, Paul Mayers, for finding, marrying and supporting ‘your student’ during this process. Thank you to Pat Mayers, for helping me at crucial moments. Thank you to Anglo American, and to the employees who supported my research process. Above all, thank you to my heavenly Father who inspired and directed this journey through many answered prayers.

Many believed in me and supported me, even after my naïve dream of climbing this unknown mountain (range) transformed from a two-year sprint to a five-year marathon. A very special thank you to the following people and institutions who funded my PhD: the Allan Gray Centre for Values Based Leadership at UCT Graduate School of Business, the Oppenheimer Memorial Fund, the UCT Doctoral Research Scholarship, the KW Johnston Research Scholarship, my father, Rudi Meyer, and my husband. I would also like to thank UCT for the *Scholarship for International Travel* that funded my visit to Richard Ivey Business School; and the *International Travel Grant* that funded my travel to present a paper at the Academy of Management conference in Boston, USA in 2012. Thank you to the *KIC Fund* that funded my travel to present a paper at the workshop on paradoxes in sustainability in Vancouver in 2015, and thank you to the *National Research Foundation*, whose funding, through the support of my primary supervisor, Ralph Hamann, enabled me to present a paper at the British Academy of Management conference in 2015.

Statement about the focal company and the timing of this case

Anglo American afforded me unprecedented access to investigate integration within the organisation. I would like to reiterate my sincere appreciation to the company and to the individuals who facilitated my research process, and to all those who participated in research interviews. Although the company granted that I use their real name in this thesis, none of the opinions or arguments in this dissertation should be interpreted as representing the views of the company. Furthermore, the research relates to a specific period of time. Data were collected between September 2013 and April 2014 and relates to E&SE integration at the company prior to an imminent restructuring process. Therefore, this document presents a snapshot of the organisation at a particular point in time.

Terminology, acronyms & abbreviations

1. Theoretical terminology

Corporate sustainability

Corporate sustainability is an offshoot of a growing body of knowledge on sustainability and is described as “a set of systematically interconnected and interdependent economic, environmental and social concerns at different levels that firms are expected to address simultaneously” (Hahn, Pinkse, Preuss, & Figge, 2014). It involves the integration of economic, social and environmental dimensions in organisational processes and decision-making (Gao & Bansal, 2013; Hahn, Figge, Pinkse, & Preuss, 2014; Hahn, Pinkse, et al., 2014).

Integration

Integration is variously defined. Definitions include “the development of conceptual connections among differentiated dimensions or perspectives” (Suedfeld et al., 1992, p. 393); “the process of achieving unity of effort among the various subsystems in the accomplishment of the organisation’s task” (Lawrence & Lorsch, 1967, p. 4); “identifying creative synergies between contradictory elements [by] bringing two sides of conflicting demands together, such that conflict becomes productive rather than intractable” (Smith, Besharov, Wessels, & Chertok, 2012, p. 472). Each of these definitions highlights a different, but complementary aspect of integration. Taken together, integration in this study refers to a process of making connections between differentiated dimensions and perspectives during decision-making processes. These processes may include tensions between competing priorities.

Organisational ambidexterity

Organisational ambidexterity (OA) is derived from the Latin ‘ambi’, meaning ‘on both sides’. The concept was first introduced to theory as the ability of organisations to be both aligned (efficient) and adaptive (Duncan, 1976), and was later developed as a management construct that explains an organisation’s ability to simultaneously exploit and explore - referred to as the right and left hand of the ambidextrous organisation (March, 1991). More recently, ambidexterity has been expanded to include a broader application in “different contexts where firms are under pressure to pursue seemingly contradictory activities at the same time” (Hahn, Pinkse, Preuss, & Figge, 2015, p. 5). Ambidexterity is conceptualised as being either structural (Tushman & O’Reilly III, 1996) or contextual (Birkinshaw & Gibson, 2004), however, these forms are also complementary

(Birkinshaw & Gibson, 2004). This thesis focuses on ambidexterity as “an organisation’s ability to perform differing and often competing, strategic acts at the same time” (Simsek, Heavey, Veiga, & Souder, 2009, p. 865)... “that should be pursued fully and concurrently to attain competitive advantage and long-term survival... maximising the attainment of both” (Simsek, Heavey, Veiga, & Souder, 2009, p. 867).

Organisational identity

Organisation Identity (OI) is specified “as the central and enduring attributes of an organisation that distinguish it from other organisations” (Albert & Whetten, 1985, p. 220) and it answers the question “who are we as an organisation?”

Paradox

Paradox is defined as “contradictory, yet integrated elements that exist simultaneously and persist over time” (Smith & Lewis, 2011, p. 382).

2. Acronyms and abbreviations

AA – Anglo American

E&SE – Economic and Social-ecological

GM – General Manager

NPV – Net Present Value

OA – Organisational Ambidexterity

OI – Organisational Identity

PM – Project Manager

S&SD – Safety and Sustainable Development

SVA – Sustainability Valuation Approach

3. Terminology used in the focal company

Safety and Sustainable Development (S&SD)

Safety and Sustainable Development (S&SD) refers to a department in the focal company. Safety is separated in the title to reflect the priority that is placed on safety. Members in the company understood that the term sustainability referred to economic, social and environmental dimensions. They used the term *sustainability* primarily to refer to social and environmental dimensions such as safety, health, environment, water, climate change, energy, government- and social affairs.

Table of Contents

Abstract.....	iii
Acknowledgements.....	iv
Statement about the focal company and the timing of this case.....	v
Terminology, acronyms & abbreviations.....	vi
1. <i>Theoretical terminology</i>	vi
2. <i>Acronyms and abbreviations</i>	vii
3. <i>Terminology used in the focal company</i>	vii
List of tables & figures.....	xi
Chapter One: Introduction.....	1
1. Introduction.....	1
2. Research question and theoretical gaps.....	5
3. Thesis outline.....	6
Chapter Two: Theory.....	7
1. Introduction.....	7
2. Corporate sustainability.....	8
3. Paradox.....	10
4. Organisational ambidexterity.....	12
4.1. The middle management level.....	14
5. Organisational identity.....	15
6. Theoretical framework.....	19
Chapter Three: Methodology.....	22
1. Philosophical assumptions.....	22
2. Research strategy: Process-oriented case study.....	23
2.1. Gioia-method.....	23
2.2. Case study method.....	24
3. Research setting.....	25
3.1. Project development.....	26
4. Type of evidence: Qualitative data.....	29
5. Sampling strategy.....	29
6. Data collection.....	31
7. Data analysis.....	34
7.1. Validity.....	39
8. Limitations.....	41
9. Ethical considerations.....	41

Chapter Four: Findings.....	44
1. History of integration.....	44
2. Contextual environment.....	45
2.1. Initiating a formal process of E&SE integration	48
3. Comparison of E&SE integration before and after the intentional E&SE integration process	50
3.1. Corporeal interaction	51
3.1.1. A formal process committed to E&SE integration	53
3.1.2. Skilled and legitimate facilitation.....	54
3.2. Temporality of interaction.....	56
3.2.1. Upfront, simultaneous consideration of E&SE dimensions	59
3.3. Cognitive dimensions of E&SE interaction	59
3.3.1. Surfacing and managing tensions	62
3.4. Dimensions of precedence.....	66
3.4.1. Developing alternatives.....	68
3.4.2. Suspending premature convergence	68
3.4.3. Developing a common valuation language	69
3.5. Identity dimensions	73
3.5.1. Reframing purpose enables commitment to integration.....	81
4. Enabling dimensions of E&SE integration	86
5. The process of integrating dominant economic and social-ecological dimensions.....	86
5.1. Limitations of the process model.....	88
Chapter Five: Discussion and Conclusion.....	91
1. Overview of the study	91
2. Discussion	92
2.1. Corporate sustainability	92
2.2. Corporate sustainability and organisational ambidexterity.....	96
2.3. Corporate sustainability and organisational identity/purpose.....	98
3. Limitations.....	101
4. Future research	102
5. Conclusion.....	103
References	105
Appendices	118
Appendix 1: Interview protocol: Guidelines for semi-structured interviews.....	118
Appendix 2: Interviewees, influential discussions and observations.....	120

Appendix 3: Overview of the data analysis process	122
Appendix 4: Research participant information and informed consent	123
Appendix 5: Individual level outcomes of the E&SE integration process	124
Appendix 6: Participant quotes about the process	125
Appendix 7: The before process of E&SE integration.....	127
Appendix 8: The after process of E&SE integration	132
Appendix 9: Different perceptions of sustainability	136
Appendix 10: Historic and current identity	138
Appendix 11: Identity change	142
Appendix 12: Quotes about being a <i>responsible</i> company.....	149
Appendix 13: Identity ambiguity	151
Appendix 14: <i>Responsibility</i> ambiguity	157
Appendix 15: Inherent and continuous paradoxical tension in 'responsible' identity labels	165

List of tables & figures

List of tables

Table 1: Summary of interview and observation data	33
Table 2: Comparison of E&SE integration before and after the intentional E&SE integration process	50
Table 3: Member comments about the silo-approach at AA.....	51
Table 4: Member comments about skilled and legitimate facilitation	56
Table 5: Understanding E&SE dimensions	60
Table 6: Member comments regarding social-ecological primacy.....	61
Table 7: The facilitator’s role in surfacing and managing tensions	66
Table 8: Participant comments about priorities in the project development process	67
Table 9: Challenges with NPV valuation model.....	70
Table 10: Two accounts of leadership in the industry	77
Table 11: Member comments about purpose	80
Table 12: Member comments about individual commitment to E&SE integration.....	82
Table 13: Language facilitates understanding	83

List of figures

Figure 1: Theoretical conversations that contribute to the study.....	20
Figure 2: Stages of the project development process	28
Figure 3: The interrelationship of E&SE dimensions with respect to AA’s responsible identity	78
Figure 4: Shifting from independence to interdependence	84
Figure 5: Enabling dimensions of E&SE integration	86
Figure 6: Process model of economic and social-ecological integration	87

Chapter One: Introduction

1. Introduction

Corporate sustainability is an organisational level subset of sustainability that refers to “a set of systematically interconnected and interdependent economic, environmental and social concerns at different levels that firms are expected to address simultaneously” (Hahn, Pinkse, et al., 2014, p. 299). Corporate sustainability is difficult because different economic, social and environmental priorities emerge in tension during decision-making processes (Hahn, Pinkse, et al., 2014). Sustainability is an inherently normative concept (Bansal, 2002) that is applied in a corporate setting, often framed by a predominantly instrumental approach (Hockerts, 2014). The instrumental approach emphasises alignment between economic, social and economic dimensions and dismisses tensions between these dimensions (Hahn, Pinkse, et al., 2014). However, competing economic, environmental and social priorities are also interdependent (Gao & Bansal, 2013) and therefore paradoxical in nature (Lewis, 2000; Smith & Lewis, 2011).

Neglecting the interrelationship between competing priorities is a common response to paradox (Poole & van de Ven, 1989; Smith & Berg, 1987; Vince & Broussine, 1996). In corporate sustainability this response leads to the exclusion of more complex social and environmental dimensions that do not easily align with economic priorities (Hahn & Figge, 2011). The neglect of the paradoxical nature of E&SE dimensions in organisational decision-making has resulted in harm to all dimensions over time. An example of an instrumental approach to sustainability and its consequences on economic, social and environmental dimensions is the Deepwater Horizon oil spill in the Gulf of Mexico during 2010. An investigation into the oil spill revealed that British Petroleum neglected the interrelationship between economic, environmental and social dimensions and prioritised profit in their decision-making processes. In retrospect the organisation was accused of “integrative spin” in their financial and sustainability reporting (Counsel, 2010, p. 58).

The emergent integrative view of corporate sustainability involves the integration of economic, social and environmental dimensions; acknowledges the tensions between these dimensions (Gao & Bansal, 2013; Hahn, Pinkse, et al., 2014; Margolis & Walsh, 2003); proposes that they be integrated simultaneously and without *a priori* priority on either of these dimensions (Hahn, Pinkse, et al., 2014). In practice, however, this is difficult because economic priorities tend to dominate in for profit corporations (Hockerts, 2014) and different individuals emphasise different priorities through their cognitive

frames during decision-making (Hahn, Preuss, Pinkse, & Figge, 2014). Integration without *a priori* priority is also difficult because different individuals tend to identify with either the normative or the instrumental aspects of their organisation's identity, leading to dual identity (Albert & Whetten, 1985). These identities tend to have very different approaches to determining priorities and valuing decisions (Albert & Whetten, 1985), which in turn guide issue interpretations and action within the organisation (Dutton & Dukerich, 1991). Economic predominance is associated with decision-makers seeking to align all three dimensions with economic priorities, neglecting the tension between these dimensions and prematurely discarding social and environmental dimensions that do not easily align with economic priorities (Hahn & Figge, 2011). The effects thereof are that more complex social and environmental issues with longer-term implications tend not to be integrated in decision-making processes dominated by economic priorities.

The primary theoretical lens of this study is corporate sustainability where scholars are exploring understanding of the different tensions in corporate sustainability. While some tensions have been identified, there is a lack of understanding of "other tensions that firms face when dealing with sustainability issues" (Hahn, Pinkse, et al., 2014, p. 312), and particularly tensions between and within different levels of the firm. Extant theory acknowledges that many firms adopt an instrumental view that prioritises economic dimensions (Hahn, Pinkse, et al., 2014). There is, however, a gap in theoretical understanding of how such organisations integrate social-ecological dimensions with predominant economic dimensions. Therefore, I frame the relationship between E&SE dimensions for corporate sustainability within the context of economic predominance, as the simultaneous pursuit of predominant economic dimensions on the one hand and social-ecological dimensions on the other hand. I draw on different theoretical conversations to understand the research problem. Paradox literature (Smith & Lewis, 2011) contributes understanding about simultaneously conflicting and interrelated dimensions; an identity lens offers the opportunity to explore the less visible aspects that guide organisational decision-making processes (Albert & Whetten, 1985, Dutton & Dukerich, 1991), and organisational ambidexterity (Benner & Tushman, 2015) contributes understanding about the integration of differentiated, often-competing, organisational dimensions. Organisational ambidexterity also focuses the research gap to the middle management level. Extant literature, concerned with integrating competing organisational aspects in cross-functional decision-making processes, is focused on top team integration (Smith & Tushman, 2005). Scholars, however, have recognised that integration also needs to take place at lower levels of the firm (Jansen, Tempelaar, van den

Bosch, & Volberda, 2009). This study focuses on the middle management level because middle management are central to explaining key organisational outcomes (Wooldridge, Schmid, & Floyd, 2008). While some research has been done on the middle management level (Burgelman & Grove, 2007; Jansen, Vera, & Crossan, 2009; Taylor & Helfat, 2009; Tiwana, 2008), little is known about how organisations integrate competing, interrelated dimensions on lower levels of the firm (Andriopoulos & Lewis, 2009; Raisch et al., 2009; Raisch & Birkinshaw, 2008; Smith & Tushman, 2005). The research question is: *How do organisations integrate predominant economic dimensions, on the one hand, and social-ecological dimensions, on the other?* The study addresses the research question with a process-orientation to decision-making, and by focusing, in particular on the middle management level by exploring the integration of competing, interrelated E&SE dimensions in cross-functional decision-making processes.

The research methodology centres on a process-oriented, single, revelatory case study (Gioia, Corley, & Hamilton, 2013; Langley & Abdallah, 2011; Yin, 2009), designed to explore the process of integration in a “unique” case (Yin, 2009, p. 47). The focal case offers the opportunity for revelatory knowledge and theory building because the company has been intentional about integrating E&SE dimensions and have developed a process designed to integrate sustainability into their project development process. The research method is designed to explore changes in the organisation’s integration process from the vantage point of the lived experience of purposefully sampled research participants (Patton, 1999). Data collection involved semi-structured interviews, observations and supporting secondary data. Data were analysed using categorical (Gioia et al., 2013) and connecting strategies (Maxwell & Miller, 2008). Validity claims are based on the naturalistic/interpretivist paradigm of this research (Guba & Lincoln, 1982). Limitations of the methodology include qualified transferability of the outcomes (Maxwell, 2009).

Findings from the comparative analysis of the organisation’s economic and social-ecological integration process before, and after the introduction of an intentional integration process, revealed five dimensions of interaction that were further explored. These are corporeal interaction, temporal interaction, cognitive dimensions of interaction, dimensions of precedence and identity dimensions. These dimensions were explored in relation to the *before process* and the *after process* in the comparative analysis to answer the research question. The study finds that E&SE integration in the before process was primarily reliant on a project manager, whose biases and skills guided the decision-making process to prematurely converge on a single option, without a holistic view of the

project context or understanding of the different E&SE dimensions and how they are interrelated. Project decisions were dominated by economic priorities that focused attention on the “fastest and cheapest” project. Consequently, tensions between E&SE dimensions were dismissed, rather than explored and their interrelationships emerged in project stoppages, delays and other negative consequences during project implementation.

The study identifies three structural and three procedural dimensions that enable the integration of E&SE dimensions, as well as three practices that address the tensions that constrain integration. The structural dimensions are: *a formal process committed to E&SE integration, skilled and legitimate facilitation* and *face-to-to face interaction* of a cross-functional team. The procedural dimensions are: *individual and collective commitment to participate in the integration process*, and *considering E&SE dimensions together and upfront* during the decision-making process, as well as *developing a common valuation language*. The three enabling practices are: *reframing purpose in meaningful ways to different participants, surfacing and managing tensions* and *suspending premature convergence*. *Reframing purpose* shifts members’ identification with selective sustainability dimensions to identification with economic and social-ecological dimensions in order to facilitate participation in the integration process. *Surfacing and managing tensions* related to different temporal and procedural priorities enables understanding instead of dominance of one dimension at the expense of another, during the integration process. The tension between making time and space for understanding dimensions, and prematurely converging on an option aligned with economic goals, is addressed by *suspending premature convergence*. I argue that notwithstanding organisational commitment to corporate sustainability, failure to manage tensions and paradoxes during economic and social-ecological integration perpetuates unsustainable corporate behaviour.

The thesis contributes to corporate sustainability literature with a process-model that identifies how organisations integrate predominant economic and social-ecological dimensions on the middle management level by managing the tensions that emerge during E&SE integration. The integrative view of corporate sustainability posits that E&SE integration needs to happen simultaneously and without *a priori* priority of either dimension. The study concurs with extant theory that simultaneous consideration of E&SE dimensions is essential. Simultaneous consideration, however, is not sufficient for E&SE integration. The integration of E&SE dimensions also needs to happen upfront in the

decision-making process to ensure that all E&SE dimensions are understood before binding choices are made. The study identifies how *suspending premature convergence* suppresses the tendency to quickly converge on a single option, thereby creating space and time to explore alternatives that integrate E&SE dimensions, as well as those associated with longer-term impacts. The study contributes to related organisational ambidexterity theory by identifying how the integration of highly differentiated organisational aspects can be integrated in cross-functional decision-making processes on the middle management level. The middle management level is distinct from the senior management level because E&SE integration requires quality interactions between members amongst themselves, as well as with the leader. Middle management integration requires more detailed and fine-grained understanding of how different E&SE dimensions are interrelated. Consequently, cross-functional decision-making processes on the middle management level require a hybrid approach that combines a leader-centric and a team-centric approach. Furthermore, since the process requires both divergence and convergence, a partnership between a team leader and a legitimate facilitator can enable integration on the middle management level. Furthermore, the study contributes to an emergent conversation regarding organisational purpose and shows how reframing purpose into a carefully crafted integrative metaframe can enable commitment to an integrated decision-making process.

More broadly, the study contributes to theory by identifying how plural perspectives can be incorporated in corporate decision-making processes (Hahn & Aragón-Correa, 2015), and how temporal myopia can be avoided (Marginson & McAuley, 2007; Slawinski & Bansal, 2015) to facilitate social-ecological integration, and therefore more “sustainable” corporate decision-making (Gladwin, Kennelly, & Krause, 1995).

2. Research question and theoretical gaps

The integrative view of corporate sustainability argues that the integration of E&SE dimensions should be without *a priori* priority of either dimension. In practice, however, many corporations have a primary instrumental approach that emphasises economic priorities. Extant corporate sustainability theory has not yet explained how organisations with predominant economic priorities, integrate E&SE dimensions. This gap in theory relates specifically to the integration of competing, interrelated dimensions in decision-making processes. Furthermore, it is pertinent with respect to a gap in understanding on the middle management level of the firm. As a result, I focus on a process-orientation to decision-making and give particular attention to the middle management level in

answering the research question: *How do organisations integrate predominant economic dimensions, on the one hand, and social-ecological dimensions, on the other?*

3. Thesis outline

Chapter one has provided an overview of the topic and a brief background to the study. The literature review (chapter two) provides an explanation of extant theory that relates to the research question and identifies relevant theory from corporate sustainability paradox, organisational ambidexterity and organisational identity literature. The methodology chapter describes the research setting, the research design based on a constructivist/naturalistic paradigm, data collection and analysis, ethical considerations as well as validity and limitations of the study. The findings presented in chapter four focus on understanding E&SE integration in middle management decision-making. In the discussion chapter I re-engage with the literature in relation to the study's findings and identify implications for theory and theory development. The conclusion summarises the key aspects of the study and suggests areas for further research. Tables, participant quotations and data structures that document the analysis process are included in the appendices.

Chapter Two: Theory

1. Introduction

The literature study focuses on theory that better explains the research question: *How do organisations integrate predominant economic dimensions on the one hand, and social environmental dimensions, on the other?*

The overarching theoretical conversation is the current scholarly conversation in the field of sustainability that explores tensions and paradoxes in corporate sustainability (Hahn, Pinkse, et al., 2014). A related conversation in organisational ambidexterity (OA) literature explores paradoxes between strategic organisational priorities. Although OA has been characterised largely by a particular set of competing organisational priorities, namely exploration and exploitation (Benner & Tushman, 2003; Lavie, Stettner, & Tushman, 2010; Raisch, Birkinshaw, Probst, & Tushman, 2009), the origins of the theory lie in the necessity for organisations to embrace contradictory priorities in order to be ambidextrous (Tushman, Anderson, & O'Reilly III, 1997). Consequently, the relevance of OA theory has broadened considerably as scholars have recognised numerous paradoxical challenges facing organisations. These include paradoxes between social and commercial priorities (Margolis & Walsh, 2003), between instrumentally and morally driven social initiatives (Hahn et al., 2015) and between profitability and sustainability priorities (Benner & Tushman, 2015). Although structural differentiation of competing priorities was the main focus of academic attention during the early development of OA theory (O'Reilly III & Tushman, 2004), integration among differentiated dimensions has become increasingly important (Jansen, Tempelaar, van den Bosch, & Volberda, 2009). One of the conversations in OA literature pertains to the importance of both differentiation and integration of strategic, paradoxical priorities (Andriopoulos & Lewis, 2009) and more specifically, how organisations integrate differentiated, paradoxical priorities. Organisational identity (OI) (Albert & Whetten, 1985) plays a significant role in organisational decision-making processes because it guides the interpretation of issues and action (Dutton, Dukerich, & Harquail, 1994), particularly in situations that are out of the ordinary (Albert & Whetten, 1985). Furthermore, the scholarly conversation on paradox in organisations (Lewis, 2000; Smith & Lewis, 2011) provides understanding of how organisations respond to competing, interrelated organisational priorities. This study applies the portable principles of paradox theory to the integration of competing, interrelated E&SE dimensions in corporate sustainability.

The aim of the study is not first and foremost to address individual theoretical gaps in each of these theoretical domains – as this would require specific focus on each theoretical area. Instead, the study applies each theory to better understand a gap in corporate sustainability theory on how organisations integrate competing, interrelated E&SE dimensions. The sections below explore relevant literature pertaining to the theoretical conversations within the scholarly conversations mentioned above.

2. Corporate sustainability

Corporate sustainability is an organisational-level subset of sustainable development. Sustainable development was defined by the Brundtland report, *“Our common future”*. The report recognised the inseparable relationship between the environment and development and defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Report, 1987, p. 41). This broad definition paved the way for numerous interpretations around what should be developed and what should be sustained. The 2002 World Summit on Sustainable Development introduced the three pillars of sustainable development as economic, social, and environmental. The Johannesburg Declaration on Sustainable Development further refined the three pillars as economic development, social development and environmental protection (Kates, Parris, & Leiserowitz, 2005).

Attempts to integrate the three pillars of sustainability on an organisational level have been examined in different theories including those relating to corporate social responsibility (Garriga & Melé, 2004), the business case for sustainability (Carroll & Shabana, 2010), corporate social performance (Dentchev, 2004), and stakeholder theory (Freeman, Harrison, Wicks, Parmar, & De Colle, 2010). A number of practitioner-focused theories have also engaged with how the three pillars of sustainability are interrelated at the organisational level: corporate social investment (Sparkes & Cowton, 2004) accounting for the true cost of people, planet and profit in a triple bottom line approach (Elkington, 1997), the fortune at the bottom of the pyramid (Prahalad, 2009), benefit corporations (Reiser, 2011), creating shared value (Porter & Kramer, 2011), and integrated reporting (IIRC, 2013). It is perhaps not surprising that scholars and practitioners alike continue to grapple with how to harmonise the pillars of sustainability, when considered in light of the Brundtland report’s comments about the nature of sustainable development, quoted below.

In the end, sustainable development is not a fixed state of harmony, but rather a process of change in which the exploitation of resources, the direction of investments, the orientation

of technological development, and institutional change are made consistent with future as well as present needs. We do not pretend that the process is easy or straightforward. Painful choices have to be made. (Brundtland Report, 1987, p. 17).

Corporations who have aspired to sustainability have often been accused of corporate 'window dressing' and 'green washing' because their sustainability efforts have not been integrated into core business and decision-making processes where the painful choices need to be made (Brundtland Report, 1987). A body of scholarly work that is focusing on the integration of economic, social and environmental dimensions in corporate sustainability by recognising and embracing the tensions that plague E&SE integration (Hahn & Aragón-Correa, 2015; Hahn, Pinkse, et al., 2014; Slawinski & Bansal, 2015) is emerging. This thesis contributes to this emergent body of work.

The integrative view of corporate sustainability is defined as "a set of systematically interconnected and interdependent economic, environmental and social concerns at different levels that firms are expected to address simultaneously" (Hahn, Pinkse, et al., 2014). The theory emphasises the acceptance of tensions and contradictions between seemingly irreconcilable aspects of E&SE dimensions (Gao & Bansal, 2013; Hahn, Pinkse, et al., 2014), as well as the integration of E&SE dimensions without *a priori* emphasis on either dimension (Hahn & Figge, 2011; Hahn, Pinkse, et al., 2014). Currently, however, the dominant approach to sustainable development in practice is one that involves *a priori* priority on economic dimensions (Hockerts, 2014). Scholars refer to this approach of prioritising economic dimensions as the business case approach (Hockerts, 2014) or an instrumental approach to corporate sustainability (Gao & Bansal, 2013; Hahn, Pinkse, et al., 2014). This approach dismisses tensions between E&SE dimensions and "focuses exclusively on situations where there is a consistency between financial, environmental and social dimensions" (Hahn, Pinkse, et al., 2014, p. 300). In practice, the approach guides decision-makers to exclude material, social and environmental information that does not easily align with economic priorities during decision-making processes. Typically, the social and environmental dimensions that have longer-term impacts and are therefore more complex than those with shorter-term impacts are excluded from decision-making processes (Slawinski & Bansal, 2012). As the E&SE dimensions are interrelated, however, the exclusion of material information leads to adversarial consequences on economic, social and environmental dimensions over time (Hahn & Figge, 2011).

The integration of E&SE dimensions is framed by tension between paradoxical priorities (Hahn, Pinkse, et al., 2014). Although these tensions have been recognised for some time

(Margolis & Walsh, 2003), scholars have only recently started investigating these tensions more explicitly (Hahn, Pinkse, et al., 2014; Slawinski & Bansal, 2015). Hahn et al (2014) identify four pairs of these paradoxical tensions: between personal and organisational sustainability agendas, between corporate short term and long-term orientations, between isomorphism and structural and technological change and between efficiency and resilience of socioeconomic systems. These, and other paradoxes emerge in tension during E&SE integration and constrain corporate sustainability unless they are acknowledged and embraced (Hahn, Pinkse, et al., 2014).

3. Paradox

This section focuses on paradox literature that is relevant to the research question. Paradox is defined as “contradictory yet interrelated elements that exist simultaneously and persist over time” (Smith & Lewis, 2011, p. 386); however, the relationship between contradictory elements is often concealed (Lewis, 2000).

The philosophical roots of paradox (Schumacher, 1977) identify it as a divergent problem that deals with higher faculties and higher levels of being and self-awareness where opposites cease through forces such as understanding and empathy. Cameron (1986) draws on a definition of paradox, which captures the notion that decision-makers often operate from one of several “truth-camps” (Slaatte, 1968, p. 545). Paradox challenges decision-makers to transcend the opposites and to embrace a “higher truth” that does not negate their truth, but expands it. An integrative approach to corporate sustainability also demands such a transcendent approach to tensions (Gao & Bansal, 2013).

Extant literature identifies defensive and engaging responses to paradox. Defensive responses suppress the relationship between opposites (Lewis, 2000), resulting in unconscious repression, denial and projection strategies to relieve the discomfort of paradox (Vince & Broussine, 1996). Engaging responses require that actors rethink more complicated relationships between polarities (Lewis, 2000) by challenging their thinking to embrace the relationships between seemingly opposite truths (Lewis, 2000; Cameron, 1986). Engaging responses could include acceptance, confrontation and transcendence (Jarzabkowski, Lê, & Van de Ven, 2013). Embracing both opposites of a paradox simultaneously involves seeking connections on a higher level (Slaatte, 1968). This involves reframing either/or mind-sets (Lewis & Dehler, 2000) through self- or social reflection (Lewis, 2000; Schumacher, 1977) in order to transcend ordinary logic (Schumacher, 1977). Transcendence involves second-order thinking (Watzlawick et al.,

1974 in Lewis, 2000) that critically examines assumptions of seeming opposites and facilitates reframing through self-reflection (Lewis, 2000, p. 764). It involves “moving to a higher plane of understanding in which paradoxical elements are understood as complex interdependencies rather than competing interests” (Jarzabkowski et al., 2013). Enablers of such transcendence include *staying with paradox* (Vince & Broussine, 1996), paradoxical thinking (Lewis & Dehler, 2000) and reframing (Miron-Spektor, Gino, & Argote, 2011; Seo, Putnam, & Bartunek, 2004).

Staying with paradox involves “staying with the uncertainty long enough to explore contradictions rather than suppress them” (Lewis & Dehler, 2000, p. 723), thereby enabling links between dimensions that appear in opposition as a result of how they are perceived (Vince & Broussine, 1996). *Paradoxical thinking* is “a leap that transcends ordinary logic” (Rothenberg, 1979 in Lewis & Dehler, 2000, p. 712). It enables individuals to address complexities and contradictions inherent in paradoxical tensions by breaking free from extant cognitive frames (Lewis & Dehler, 2000) that prevent them from seeing the complementarity of apparent opposites (Lewis & Dehler, 2000). The capacity to think paradoxically is “an exception, rather than the rule” (Westenholz, 1993, p. 56), and those who develop the capability are continuously “tempted” to return to extant cognitive frames when tensions persist (Lüscher & Lewis, 2008). *Reframing the paradox* is a form of transcendence that transforms opposites “into a new perspective or a reformulated whole... in reframing, new conceptual definitions arise and previously held polarities are replaced with the new frame” (Seo, Putnam, & Bartunek, 2004, p. 77). However, this requires a frame that reconciles both poles. This *paradoxical frame* invites a creative conflict that increases exploration and enables the generation of innovative possibilities through a combination of differentiation and integration that yields more creative results than each process in separation (Miron-Spektor et al., 2011). “Paradoxical frames shift the focus from competitive to complementary thinking, thus allowing people to accept the inherent contradiction and find ways in which both task demands can be accomplished” (Miron-Spektor et al., 2011, p. 238).

Responses to paradox have been categorised in terms of cognitive frames (Hahn, Preuss, et al., 2014). According to Lewis (2000) paradox stems from polarised cognitive or social constructions that may cause defensive reactions. Although tensions provide the opportunity to rethink polarities, “people often cling to the security and order of extant frames to avoid recognising their cognitive foibles” (Lewis & Dehler, 2000, p. 712). Consequently, they interpret “phenomena through simple, dichotomised frames of

reference" (Lewis & Dehler, 2000, p. 711). A cognitive frame is akin to a knowledge structure, defined as a "mental template that individuals impose on an information environment to give it form and meaning" (Walsh, 1995, p. 281). A review of the literature on frames and framing defines frames as "knowledge structures that help individuals to organise and interpret incoming perceptual information by fitting it into already available cognitive representations from memory" (Cornelissen and Werner, 2014, p. 187).

Scholars have identified at least two competing frames in corporate sustainability - the business case frame and the paradoxical frame, that are identified as ideal types on the end-points of a continuum (Hahn, Preuss, et al., 2014). The business case frame converges all relevant information into an economically viable business case, but often prematurely eliminates material social and environmental information during decision-making processes. The paradoxical frame diverges and seeks to incorporate all relevant dimensions into the decision-making process. "Paradoxical frames shift the focus from competitive to complementary thinking, thus allowing people to accept the inherent contradiction and find ways in which both task demands can be accomplished" (Miron-Spektor, Gino, & Argote, 2011, p. 229). However, individuals with a paradoxical frame struggle to converge all dimensions into a competitive, sustainable business case within a reasonable timeframe (Hahn, Preuss, et al., 2014; Slawinski & Bansal, 2012).

The co-existence of competing frames is complicated because individual cognitive schemas simplify complex realities into pre-existing schema (Schwenk, 1984). Gilbert (2006) explored whether competing frames can co-exist in the context of demands on managers to maintain multiple capabilities that require them to embrace competitive cognitive frames. He identified that firms require multiple frames to co-exist simultaneously but proposes that these frames be kept in structural isolation on an operational level and only integrate on the senior team level. The structural differentiation of competing frames ensures that different functions can develop without operational interference. Tensions between competing frames are integrated on the senior team level (Gilbert, 2006). Gilbert (2006) acknowledges that this structural solution for managing the paradoxes of competing, interrelated organisational frames is consistent with research on organisational ambidexterity (Tushman & O'Reilly III, 1996).

4. Organisational ambidexterity

Organisational ambidexterity (OA) is derived from the Latin 'ambi', meaning 'on both sides'. The concept was first introduced as the ability of organisations to be both aligned

(efficient) and adaptive (Duncan, 1976), and was later developed as a management construct that explains an organisation's ability to simultaneously exploit and explore - referred to as the right and left hand of the ambidextrous organisation (March, 1991). OA is widely recognised as a hallmark of successful organisations that are able to reconcile conflicting interests in dynamic environments in order to enhance long-term firm-benefits (Gibson & Birkinshaw, 2004). OA scholars delineate structural ambidexterity (Benner & Tushman, 2003) and contextual ambidexterity (Gibson & Birkinshaw, 2004), however, these forms are also complementary (Birkinshaw & Gibson, 2004). The former refers to architectural dimensions of ambidexterity and the latter to methods, practices and processes that enable ambidexterity. Structurally, ambidextrous organisations are defined as those organisations who have a distinct ambidextrous structure that involves highly differentiated subunits that are tightly integrated at the senior team level (O'Reilly III & Tushman, 2004). The theory posits that ambidextrous organisations allow 'cross-fertilisation' without 'cross-contamination' by enabling sharing of resources while maintaining distinct processes, structure and cultures within differentiated subunits. The architecture allows differentiated units to be shielded from distractions and "focus all their attention and energy on refining their operations, improving their products, and serving their customers" (O'Reilly III & Tushman, 2004, p. 2).

OA has been extended to a number of different competing tensions beyond the context of exploration and exploitation, including efficiency-flexibility (Adler, Goldoftas, & Levine, 1999), alignment and adaptability (Birkinshaw & Gibson, 2004), and differentiation-integration (Andriopoulos & Lewis, 2009). More recently, ambidexterity has been expanded to include a broader application in "different contexts where firms are under pressure to pursue seemingly contradictory activities at the same time" (Hahn, Pinkse, Preuss, & Figge, 2015, p. 5), such as organisations aiming to become sustainable. This thesis focuses on ambidexterity as "an organisation's ability to perform differing and often competing, strategic acts at the same time" (Simsek, Heavey, Veiga, & Souder, 2009, p. 865)... "that should be pursued fully and concurrently to attain competitive advantage and long-term survival... maximising the attainment of both" (Simsek et al., 2009, p. 867).

Scholars have investigated OA within and across organisations (Lavie & Rosenkopf, 2006; Lavie et al., 2010), across organisational alliances (Lin, Yang, & Demirkan, 2007), and on a project level within ambidexterity alliances (Tiwana, 2008). OA is conceptualised within independent organisations as well as within organisations with interdependent sub-units (Simsek et al., 2009).

OA scholars have increasingly conceptualised the ability to be ambidextrous with a paradox lens (Adler et al., 2009, 1999; Birkinshaw & Gibson, 2004; Jansen, Bosch, Volberda, & Den, 2006; Lavie et al., 2010; O'Reilly III & Tushman, 2007; Papachroni, Heracleous, & Paroutis, 2015; Simsek, 2009; Tushman et al., 1997). The relationship between these constructs was noted in Adler, Goldoftas, & Levine (1999), where the authors concede that their OA findings could equally be explained by applying a paradox lens, using structural and temporal separation (Poole & Van de Ven, 1989). Following a stream of literature that relate the two theoretical lenses, Andriopoulos & Lewis (2009) formalise the relationship between paradox and ambidexterity by focusing on an organisation's ability to differentiate and integrate as strategic enablers of OA.

The relationship between paradox and ambidexterity is pertinent to the current study as both theories contribute to a better understanding of the integration of paradoxical dimensions in corporate sustainability. Both theories recognise paradoxes across different levels of the organisation, requiring simultaneous differentiation and integration (Andriopoulos & Lewis, 2009), as well as the need for on-going management of the tension between integration and differentiation (Raisch et al., 2009). Differentiation enables the benefits of focused action, while integration "positions tensions as interwoven and synergistic" (Andriopoulos & Lewis, 2009, p. 697).

E&SE dimensions are often structurally separated in large organisations, yet they also need to be integrated for corporate sustainability. An OA lens on E&SE integration offers a unique understanding of integration in the context of structurally separated E&SE dimensions because OA literature has focused much attention on the structural solution (Benner & Tushman, 2015). A paradox lens on OA (Papachroni et al., 2015) embraces tensions and blends differentiation and integration through structural separation coupled with integrative linking mechanisms (Hahn et al., 2015). Smith and Tushman (2005) focused on integration in cross-functional teams at the senior team level but little is known about the integration of competing, paradoxical priorities at lower levels of the firm. Consequently, this study contributes to a multi-level understanding of OA (Simsek, 2009), by focusing on integrating competing, interrelated dimensions at the middle management level.

4.1. The middle management level

Following Wooldridge et al., (2008) and others, I refer to middle management in a broad sense as *above first level supervision and below top management*. The middle management

level is pertinent to E&SE integration because middle managers make intermediate decisions that have organisational level outcomes (Wooldridge et al., 2008) and influence strategic decisions at the senior level by different means, including “issue selling” (Dutton, Ashford, O’Neill, Hayes, & Wierba, 1997; Maitlis, 2005). Middle managers do not only act as intermediaries between daily operations and top management but they are also horizontal information brokers and capability integrators who act as anchors for integration (Bartlett & Goshal, 1993). They are critical connectors of different organisational aspects and their linking activities have economic, structural, social and cognitive influences (Taylor & Helfat, 2009). Middle managers are interpreters and sellers of strategic change (Rouleau, 2005). Their perceived resistance to change has been attributed to a misunderstanding of the complexity of their role as interpreters and change mediators (Balogun, 2003). Although middle managers expect direction from top management, they are not purely implementers but can improve decisions as they are “in a better position to initiate and assess alternative courses of action” (Wooldridge & Floyd, 1990, p 240). We still know little about how competing, interrelated organisational dimensions, especially those associated with E&SE dimensions, are integrated at the middle management level (Andriopoulos & Lewis, 2009; Raisch et al., 2009; Raisch & Birkinshaw, 2008; Smith & Tushman, 2005).

5. Organisational identity

Benner & Tushman (2015, p. 504), in a recent review of organisational ambidexterity, recognise that the management of strategic, paradoxical priorities is also associated with framing contests, identity transitions, an overarching set of core values and/or the development of an overarching identity. Consequently, organisational identity is a helpful complementary lens to understand the research question because organisational identity influences interpretation and organisational action during difficult decision-making processes (Dutton et al., 1994). More specifically, an identity lens is helpful to understand how an overarching frame enables the integration of strategic, paradoxical priorities (Benner & Tushman, 2015). Organisational identity scholars have recently started exploring paradoxical identities (Gotsi, Andriopoulos, Lewis, & Ingram, 2010; Kozica et al., 2014), and sustainability-focused identities (Hamilton & Gioia, 2009). An excerpt from Hamilton and Gioia (2009) illuminates how sustainability and identity are related.

Sustainability is a multifaceted concept that presumes a dynamic balance among economic, environmental, and social goals. This sort of balance is admittedly difficult to achieve - for most organisations today it is more an aspiration than a reality and will require a shift in, and possibly even a thorough reconsideration of, current beliefs, values, and practices. Sweeping change of this nature is far more likely to take hold and become permanent when new thinking and acting express a deeply held commitment to sustainability on the part of the organisation. In other words, an enduring shift towards sustainable organisational

practice requires that sustainability become a fundamental, indispensable part of an organisation's identity. (p. 436).

Organisational identity is specified “as the central and enduring attributes of an organisation that distinguish it from other organisations” (Albert & Whetten, 1985, p. 220) and asks the question “who are we as an organisation?” or “what kind of organisation are we?” (Albert & Whetten, 1985; Whetten, 2006). Organisational identity makes central character claims about the essence of the organisation; distinctiveness claims that distinguish an organisation among other similar organisations; and temporal continuity or endurance claims (Albert & Whetten, 1985; Whetten, 2006). Centrality is understood to be deeply rooted - often unseen - widely shared and structurally at the centre of the organisation members' causal map (Corley et al., 2006). Distinctiveness “is predicated on comparison, on judgments of similarity and difference to comparable entities” (Corley & Gioia, 2006, p. 92). Organisations typically seek to be optimally, rather than maximally distinctive from other organisations to ensure that they can be identified as part of a recognised category while simultaneously distinguishing themselves within that category (Navis & Glynn, 2010; Whetten & Mackey, 2002). Endurance essentially deals with identity continuity, raising the question whether and how OI changes. The social actor view of organisational identity is resistant to change (Albert & Whetten, 1985; Whetten, 2006) and the social constructionist view embraces the dynamic nature of organisations that may lead to organisational identity change (Ravasi & Schulz, 2006, p. 435). Organisational identity transitions lead to identity ambiguity (Corley & Gioia, 2004). Triggers for identity ambiguity include *changes in social referents*, *temporal identity discrepancy* described as the difference between current and aspirational identity claims - and *construed external image discrepancies* (Corley & Gioia, 2004).

Foreman and Whetten (2002) describe identification as a process of comparing individual identity with organisational identity - either a comparison between self-identity and organisational identity or a comparison between self-identity and ideal organisational identity. Ashforth, Harrison, & Corley (2008) identify conflicts as a result of identification with different identities with different goals, values or norms. This may lead to dual identities (Albert & Whetten, 1985), which evoke different principles and logics during decision-making processes. During difficult times such as retrenchment, competing aspects may emerge in conflict and tension and each identity is likely to argue that the whole organisation adopt its strategic focus (Albert & Whetten, 1985). Organisations with dual identities need to “invent a mechanism for the discovery of organisational priorities

that does not *a priori* value one organisational identity as more important than another; to do otherwise is to prejudge the issues which is at stake” (Albert & Whetten, 1985, p. 290). Ashforth, Harrison, & Corley (2008) reviewed the literature on identification. They found that organisations have nested identities and argue that complicating identity by affirming both the nested and the overarching identity – the dual identity model – allows for diversity within the identity. The excerpt from Ashforth et al., (2008) below explains this concept:

Because organisational identities are inclusive, they are often couched in relatively abstract and holistic terms, necessitating lower order identities that are more specific and differentiated according to the localized context (e.g., function-specific departments... [and] project teams). Returning to Lawrence and Lorsch (1967), structural differentiation is a necessity and, with it, differentiation in identity and, thereby, identification... A more complex solution is the dual identity model, where both the lower order and superordinate identities are affirmed as well as the essential complementarity of multiple lower order identities (González & Brown, 2003; Hornsey & Hogg, 2000; Huo, Smith, Tyler, & Lind, 1996; cf. Eiggins, Reynolds, & Haslam, 2003). Similarly, Haslam and Ellemers (2005: 90) wrote of “organically pluralistic” organisations whose superordinate identity “incorporates group difference as an identity-defining feature.” Thus, as Dovidio, Kawakami, and Gaertner (2000: 153) noted in the context of racial and ethnic conflict, “The development of a common ingroup identity [does] not require people to forsake their [other] identities.” (p. 355) “In short, “Social harmony is most likely to be achieved by maintaining, not weakening, subgroup [lower order] identities, provided they are nested within a coherent superordinate identity” (Hornsey & Hogg, 2000: 143). (p. 336).

Organisational purpose has been conceived of as unifying different organisational aspects in complex organisations (Singleton, 2014; Barnard, 1938, 1968). Consequently, it is a helpful ancillary lens to understand how conflicting identities are integrated. Organisations have been defined as instruments of purpose (March & Sutton, 2013). However, organisational purpose is a slippery concept with a chameleon-type nature. It is not clear that an organisation’s written statement of purpose at any given time reflects what it is actually doing and organisations often fail to update their purpose statement following changes over time (Warriner, 1965). Although organisations succeed in establishing a sense of purpose, it is rare to find an organisation where the members have a shared purpose (Carton, Murphy, & Clark, 2014). Organisational purpose may be variously defined for various purposes within a single organisation, as noted by March & Sutton (2013):

Organisations are commonly defined as instruments of purpose. They are seen as coordinated by intentions and goals. Such a formulation has often troubled students of organisations. It is not clear that organisational purpose can be portrayed as unitary or that the multiple purposes of an organisation are reliably consistent. It is not clear that a single conception of purpose is shared among participants in an organisation. It is not clear that purpose antedates activities. Nevertheless, talking about the purposes of organisations and evaluating comparative organisational success and failure in fulfilling those purposes are conspicuous parts of conventional discourse. (p. 698).

Lepisto (2015) explored organisational purpose from an organisational identity lens and found that it is not clear how the focus on *who we are as an organisation* relates to *why we exist*. Although organisational identity and purpose share similarities such as normative and instrumental dimensions, they are distinct. Lepisto reviewed the literature on organisational purpose and found that "organisational purpose, at minimum, to be a) an organisational level concept, b) that is self-reflexive in nature, and c) is commonly discussed in non-economic terms that are often value-laden or 'normative in nature'... relating to morals, values or its place in society" (Lepisto, 2015, p. 35). However, he also finds other perspectives that "discuss organisational purpose as synonymous with a statement regarding achievable, pragmatic organisational goals" (Lepisto, 2015, p. 20). Lepisto (2015, p. 23) focuses on the functions of organisational purpose and identifies two functions from his review of the literature: firstly, to "justify the organisation's existence [what is it for or why it exists]" and secondly, to "direct and guide behaviour through pragmatic goals" (Lepisto, 2015, p. 20). In an excerpt from his thesis, below, he comments on the integration of these functions of purpose (Lepisto, 2015):

Integrating the two functions of purpose suggests these two functions may not necessarily overlap. To illustrate, an organisation's purpose might be "to be the number one shoe manufacturer" satisfying the second function, but its unclear if this satisfies the first (i.e., explains why it is important the organisation exists). Likewise, an organisation's purpose might be to "create happiness" satisfying the first function, but its unclear if this satisfies the second (i.e., what is the future, pragmatic goal of the organisation?). Alternatively, these functions may overlap. For instance, an organisation's purpose might be "alleviate poverty in third world countries" which seems to satisfy both functions. (p. 26).

Singleton (2014) explored organisational purpose and how the construct has developed over time. She found that the original use of organisational purpose in Barnard's (1938, 1968) book on *Functions of the Executive* integrated both normative and utilitarian dimensions. Organisational purpose was intended to act as an overarching frame between differentiated management functions in order to guide priorities. Barnard (1968) posits that specialisation in complex organisations is inevitable, however, different units need to understand the organisation's general purpose with respect to the purpose of that sub-unit and they need to accept it and believe in it. He argues, "A purpose does not incite cooperative activity unless it is accepted by those whose efforts will constitute the organisation. Hence there is initially something like simultaneity in the acceptance of a purpose and willingness to cooperate" (Barnard, 1968, p. 86).

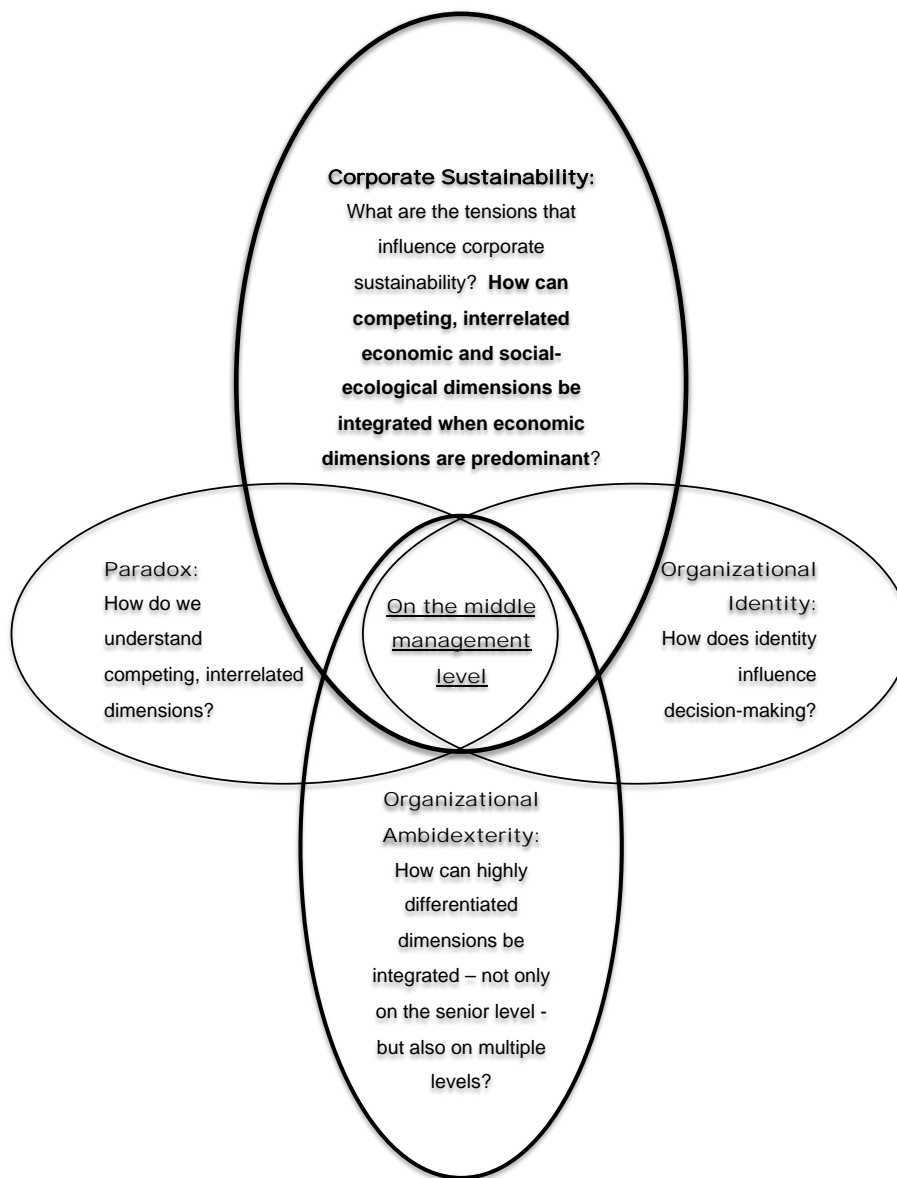
Singleton (2014) classifies purpose as an 'umbrella construct' (Hirsch & Levin, 1999) that incorporates more than one domain. She argues that the concept 'purpose' failed to survive in its original form, which depicted a dual nature; and did not survive in

organisations because it straddled both normative and instrumental concepts. It became apparent that terms that straddle both normative and instrumental dimensions seem to starve out in management literature even though fragments of the construct may survive. Fragments of purpose, namely the normative concept 'mission' and the instrumental concept 'goal' survived as fragments of purpose in management (Singleton, 2014). We know little about how competing, interrelated organisational aspects are integrated in decision-making processes.

6. Theoretical framework

I position the study in the corporate sustainability literature where scholars are calling for understanding of different tensions that affect corporate sustainability (Hahn, Pinkse, et al., 2014). This study addresses a gap in corporate sustainability theory that relates to how organisations with predominant economic orientations integrate E&SE dimensions in decision-making processes when the integrative view of corporate sustainability demands that there be no *a priori* priority between E&SE dimensions (Hahn, Pinkse, et al., 2014). I draw on several theories that illuminate different aspects of this research gap such as organisational ambidexterity literature (Gibson & Birkinshaw, 2004; Tushman & O'Reilly III, 1996). Ambidexterity scholars are concerned with how organisations integrate structurally differentiated paradoxical priorities (Simsek, 2009) and their focus has shifted from an exclusively senior management level (Smith & Tushman, 2005) to a multi-level understanding (Simsek, 2009). Consequently, organisational ambidexterity literature narrows the research gap to the middle management level (Taylor & Helfat, 2009), where there is insufficient understanding of how organisations integrate competing, interrelated organisational dimensions. Ambidexterity scholars also recognise framing and identity contests (Benner & Tushman, 2015) associated with the integration of strategic paradoxical priorities and these are explored with an organisational identity lens (Albert & Whetten, 1985; Dutton & Dukerich, 1991). Furthermore, portable principles from paradox literature (Lewis, 2000; Smith & Lewis, 2011) provide understanding of how individuals and groups respond to competing, interrelated organisational dimensions (Smith & Lewis, 2011). Figure one, inspired by Huff (1999, p. 20) visualises the relationship between the different theories that contribute to this study and highlights the theoretical gap.

Figure 1: Theoretical conversations that contribute to the study



In summary, this section identifies an overarching gap in corporate sustainability literature (Hahn, Pinkse, et al., 2014; Hahn, Preuss, et al., 2014) that relates to understanding tensions that influence sustainability. More specifically there is a gap in understanding the tension between predominant economic and social-ecological dimensions in decision-making processes. This gap is narrowed down by organisational ambidexterity theory (Gibson & Birkinshaw, 2004; Tushman & O’Reilly III, 1996) where scholars have been exploring the differentiation and integration of competing, interrelated dimensions (Andriopoulos & Lewis, 2009) and have shifted their focus from the senior management level (Smith & Tushman, 2005), to a multi-level perspective (Simsek, 2009). This study focuses on understanding the research gap on the middle management level

and draws on relevant paradox (Lewis, 2000; Smith & Lewis, 2011) and organisational identity literatures (Albert & Whetten, 1985; Dutton & Dukerich, 1991) that illuminate different aspects of the research question: *How do organisations integrate predominant economic dimensions on the one hand, and social environmental dimensions, on the other?*

Chapter Three: Methodology

The research methodology follows a systematic approach to answer the research question: *How do organisations integrate predominant economic dimensions, on the one hand, and social-ecological dimensions, on the other?*

1. Philosophical assumptions

The research paradigm of this thesis is constructivist/naturalistic (Denzin & Lincoln, 2008). Constructivism and its sister paradigm, interpretivism, are aimed at “understanding the complex world of lived experience from the point of view of those who live it” (Schwandt, 1994, p. 118), and primarily focuses on human social processes and activities (Maréchal, 2010). It is generally opposed to the objectivist ontology of positivism that focuses on measuring a ‘real’ world (Schwandt, 1994). Instead, constructivism and interpretivism focus on the interpretation of situation-specific meaning: “It is to offer the inquirer's construction of the constructions of the actors one studies” (Schwandt, 1994, p. 118). Unlike positivist research that is concerned with identifying causal relationships between constructs, naturalist enquiry is satisfied with “teasing out plausible connections between phenomena” (Guba & Lincoln, 1982, p. 242).

The constructivist paradigm assumes that there are multiple realities and therefore has a relativist ontology. Lincoln and Guba (1998) describe a relativist, constructivist ontology as follows.

Realities are apprehendable in the form of multiple intangible mental constructions, socially and experimentally based, local and specific in nature (although elements are often shared among many individuals and even across cultures), and dependent for their form and content on the individual persons or groups holding the constructions. Constructions are not more or less ‘true’ in any absolute sense, but simply more or less informed and/or sophisticated. Constructions are alterable, as are their associated realities. (p. 206).

There is no distinctive constructivist methodology (Maréchal, 2010), however the method is based on naturalistic procedures (Denzin & Lincoln, 2008, p. 32). It is essentially interpretive and relates to the logical discussion of ideas and opinions. The final aim is to “distil a consensus construction that is more informed and sophisticated than any of the predecessor constructions” (Guba & Lincoln, 1998, p. 207). It focuses on rich contextual descriptions, is sensitive to processes and builds theory grounded in data to “take full advantage of the not inconsiderable power of the human-as-instrument” (Guba and Lincoln 1982, p. 235).

In the constructivist paradigm, the interviewer and the interviewee co-create understanding about the world, therefore it has a subjectivist, transactional epistemology.

The epistemology frames the relationship between the researcher and the research subjects (Burrell & Morgan, 1979) by “interactively” linking them in a process of creating the “findings” (Guba & Lincoln, 1998, p. 207).

The aim of ontological and epistemological consistency guided methodological choices (Edmondson & Mcmanus, 2007) throughout the study to ensure alignment with the constructivist/naturalistic paradigm.

2. Research strategy: Process-oriented case study

The research strategy is a process-oriented case study (Langley & Abdallah, 2011; Langley, 1999). Qualitative studies on strategy processes seemed to have converged into two major streams over the past two decades, namely the Eisenhardt method and the Gioia-method (Langley & Abdallah, 2011, p. 203). The Eisenhardt method is positivist in its ontology, and aimed at generalizable theory building and novel insights gained from comparing multiple cases. The Gioia-method is naturalist in ontology, aimed at “interpretive modelling of informant understandings over time” and generally based on a single, in-depth case (Langley & Abdallah, 2011). This thesis adopts the latter approach and explores the process of integration by inducting theory from data obtained from a single case study (Gioia et al., 2013). The Gioia approach is prominent in process studies (Langley & Abdallah, 2011) and studies in organisational identity (Foreman & Whetten, 2014).

2.1. Gioia-method

The Gioia-method (2013) enables the researcher to capture research participants’ comments and understandings in a systematic data-driven process model. The method is inspired and founded on the principles of grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1990), although it offers a more flexible orientation to qualitative, inductive research than grounded theory (Eisenhardt & Graebner, 2007; Gioia et al., 2013). The Gioia-method is often applied to build theory to fill a research-gap. It is aligned with the constructivist paradigm in that it primarily focuses on “the means by which organisation members go about constructing and understanding their experience and less on the number or frequency of measureable occurrences” (Gioia et al., 2013, p. 16). Consequently, a single comment in a participant interview could be the key to understanding a particular occurrence or it might link two pieces of a theoretical puzzle.

The Gioia-method embraces methodological rigour and innovation. Methodological creativity has been encouraged in the domain of qualitative research where authors have

argued that extant qualitative methods limit their ability to deliver original theory (Bansal & Corley, 2011; Gioia et al., 2013). To this end, the Gioia-method claims responsibility for significant contributions to methodological innovation:

Each of the published studies over the past 20 years contains some sort of methodological innovation. When the approach is treated as a template or cookbook, it not only constrains its innovative possibilities, but also seems to get in the way of using it to address one of its main intents: rigorously demonstrating connections between data and theory. (p. 26).

This thesis does not claim methodological innovation, however, it does depart from the Gioia-method by placing significant emphasis on connecting strategies, in addition to the popular focus on categorical strategies (Maxwell & Miller, 2008). This methodological nuance facilitated significant discoveries during the analysis process of this study and is explained in more detail in the analysis section below.

The Gioia-method has frequently been applied in single case studies (Foreman & Whetten, 2014). The method enables in-depth understanding and the uncovering of concepts that form the building blocks of theory building and development (Ravasi & Canato, 2013). This method was judged appropriate to explore the relatively new and emergent concept of E&SE integration in an inductive, revelatory case study with the intent of building emergent theory based in the constructivist/naturalistic paradigm (Corley & Gioia, 2004).

2.2. Case study method

The thesis is a single, revelatory case study (Yin, 2009) that explores the emerging concept of integration. The case study method aligns with the research question, the researcher's control, and the focus of the study on a contemporary event (Yin, 2009). The research question "how do...?" implies a process-orientated, exploratory investigation that is particularly relevant to case-study research. The practice of integration is emerging in corporate sustainability theory (Gao & Bansal, 2013; Hahn, Pinkse, et al., 2014) and in practice. Unlike the rigidity of a survey strategy (Yin, 2009), the case study allows for a more complex research problem, greater depth of investigation and the possibility for deeper insights. Furthermore, the case study method allows flexibility of design that accommodates changes in the event of surprises during the study (Farquhar, 2012) and "allows the investigator to retain the holistic and meaningful characteristics of real-life events" (Yin, 2009, p. 4). Consequently, the case study method appears to be the best overall 'fit' in the quest to achieve the research objectives (Farquhar, 2012).

This thesis is presented as a single case, as is common in the Gioia-method (Foreman & Whetten, 2014; Gioia & Chittipeddi, 1991), and aims to provide in-depth understanding of the process of E&SE integration. The choice of a single case was predicated on the need to

exploit a rare opportunity to explore the process of integration (Eisenhardt & Graebner, 2007) in its “real-life context” (Yin, 1981, p. 59) in a setting that provides unusual access to research opportunities (Yin, 1994; Eisenhardt & Graebner, 2007).

The study seeks to explore understanding of integration amongst knowledgeable individuals across the company. Knowledge about, and experience with integration is scattered throughout the company and vested in select individuals and processes, and not comparable across units. The opportunity to gain understanding by exploring the process in-depth, where it occurs in the organisation, and where there is access to data, allows for revelatory knowledge that may be gained through a single case study (Yin, 2009).

The selection of a single case study method was not only theoretical, but also pragmatic, ensuring that the research was both interesting and significant for the researcher (Yin, 2009). The single case study is the preferred method for a study of this nature as it facilitates depth of understanding that is not as easily achieved in a multiple case study. The single case method ensures an appropriate fit between the researcher’s personal orientation, the research paradigm and the research project (Farquhar, 2012).

Despite the limitations of single case research, which are considered in the limitations section below, single cases have made significant theoretical contributions to theory. These include the investigation of the New York Port Authority’s response to homelessness in Dutton & Dukerich (1991) and the exploration of change at a school in Gioia & Chittipeddi (1991). Both these cases have influenced organisational scholarship and their portable insights have bridged theoretical domains.

3. Research setting

The research setting for this study is Anglo American (AA) – a multi-national group of mining companies that was founded in 1917. AA was purposefully sampled (Eisenhardt, 1989; Erlandson et al., 1993; Patton, 1990) and deliberately selected for its ability to provide revelatory information on E&SE integration that is not readily available elsewhere (Maxwell, 2009).

AA’s most enduring purpose statement was coined by Sir Ernest Oppenheimer in 1953: “The aim of this group is, and will remain, to make profits for our shareholders, but to do so in such a way as to make a real and lasting contribution to the communities in which we operate” (Anglo American, 2014). AA was publicly listed in London, UK, where its

international head office now resides. It retains a strong South African footprint, where several of its corporate functions are located. At the time of data collection, the company employed and contracted 150 000 individuals around the globe. The group's revenues for 2013 were in excess of US\$29Bn. At the time of this research, AA mined iron ore and manganese, metallurgical and thermal coal, copper, nickel, platinum and diamonds in surface and underground operations in Africa, Asia, Europe, North America, South America and Australasia.

Pertinent to this study is AA's stated commitment to financial, social and environmental responsibility. The company website states that "we have acquired a very defined sense of responsibility and purpose and recognise business has to be an integral part of addressing the big challenges facing society" (Anglo American, 2014). AA is publicly committed to not only complying with sustainability principles, but also to setting new industry benchmarks. They state that "our investment on a business level... has also been mirrored by our commitment on a social scale and AA has been in the vanguard of several initiatives that have changed the way global mining is viewed within the industry and by the population at large" (Anglo American, 2014). AA's Safety & Sustainable Development update of April 2013 declares that 'integrating sustainability into business processes and practices is part of the AA corporate strategy' (Anglo American PLC, 2013a, p. 1).

At the time of this research AA had one of the largest project development portfolios in the mining industry and its growth strategy included exploration projects. Mines are either classified as surface mines (open cast) or underground mines that exploit ore bodies deep below the earth's surface. In recent years, exploration techniques have become more complicated and more expensive as surface-resources across the world have been largely exploited, necessitating a sophisticated process of geological, technical, financial and commercial evaluation, before a decision is taken on whether to mine and exploit an ore deposit (Anglo American PLC, 2012).

3.1. Project development

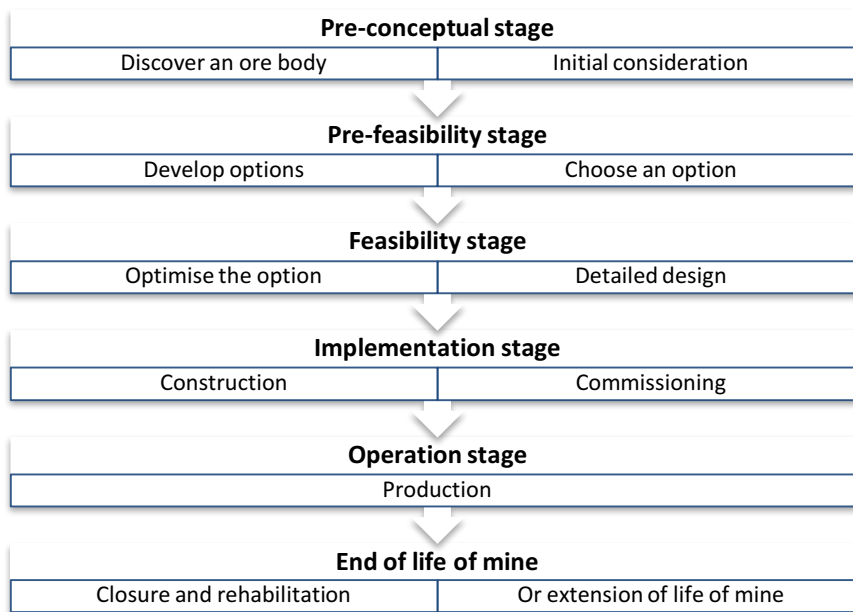
AA has a sophisticated and well-documented project development process, called 'Anglo Projects Way'. Once the company identified an ore body, a project manager (PM) is appointed who is responsible for the entire project – including the development of a project plan. A project plan typically includes up to 18 management domains including geology, mining, metallurgy, various engineering disciplines such as civil, mechanical, electrical, structural; control and instrumentation, human resources, finance, risk, legal, government affairs as well as the different aspects of sustainable development such as

social affairs, safety, water, carbon and energy, environment and health. A manager provided a high-level overview of the projects process, highlighting the tensions between team members from different disciplines:

We have a pretty good system for evaluating whether a project can make money or not. You have the owner's team sitting in the business unit that takes the project and gives birth to it and brings it up through the ranks. Then you've got a Technical Business Consultant Team sitting in head office whose job it is to review that project and act as a judge and jury and say if it is feasible. They act as oversight over what those guys are doing. Eventually the report that goes up to the investment committee should contain a properly reviewed business case setting out both the positives and all of the risks to make a proper decision. It is a very good system that is well defined but even though it is there, there are a couple of human tensions inside there that always play out. Typically between project managers and engineers and the more conservative guys from corporate finance, legal or perhaps some of the more S&SD-type guys that say, 'guys, there are some real risks and issues associated with this.' (MRA2).

The project development process involves several different stages. After discovering an ore body, the conceptual stage of the project development process aims to develop a reasonable prospect for a business case. The pre-feasibility stage is aimed at developing different options, leading to a single choice that is further developed in the feasibility stage. During the feasibility stage the project is planned and designed in detail before proceeding to the implementation phase where the mine is constructed and commissioned before operations begin for the period of the 'life of mine'. The 'life of mine' indicates the number of years that an operation plans to mine an ore body according to the approved mine plan. Between each of the project stages there are stage gate reviews, which are undertaken by different management disciplines to ensure that the appropriate standards have been adhered to during each stage. Funding for each stage is predicated on completion of the stage requirements as well as stage gate approval. Figure two, below, visualises the project development process in its different stages.

Figure 2: Stages of the project development process



More specifically, AA introduced the concept of integration as part of their emergent sustainability strategy in 2009, and they have given dedicated resources to this cause by starting an integration arm within their sustainability department and developing a formal integration process that forms part of the organisation’s project planning process. This integration process made AA a unique and revelatory setting for exploring the process of E&SE integration.

Initial fieldwork to determine AA’s suitability as a primary case happened prior to the commitment to choose AA as the primary case (Patton, 1999, p. 1197). To this end, two exploratory discussions were conducted with organisational members who were directly involved with integration at AA. The high-level discussions involved themes around the history of integration at AA, the present state of integration, and whether integration could be studied in the company. In addition, access to the company and to data sources was discussed (Kulka, 1982). These interviews confirmed AA’s suitability as the primary case in this study. AA as a case study promised the opportunity for revelatory knowledge with respect to how the company integrated E&SE dimensions before and after the introduction of the SVA. Access to research E&SE integration at AA was granted based on a non-disclosure agreement and limited the focus of the investigation to E&SE integration prior to an imminent restructure of the company, following the appointment of a new CEO.

4. Type of evidence: Qualitative data

The study relies on evidence from qualitative data. The interest of this study is not just in events, but also in how individuals understand, interpret and respond to them within their particular context. Therefore, the “human instrument” is an appropriate choice (Maxwell, 2009, p. 245). The aim of understanding how integration takes place plays directly into the main strength of qualitative data, which is “understanding... the process by which phenomena take place” (Maxwell, 2009, p. 232). Furthermore, qualitative data are appropriate for this process study because this type of data facilitates understanding by capturing detail about processes as they evolve over time (Langley & Abdallah, 2011). Qualitative data are the most appropriate primary source of data for this study because qualitative data are best suited to answer the research question and because the choice of qualitative data are aligned with preceding methodological choices (Burrell & Morgan, 1979; Morgan, 1980; Van de Ven, 2007).

5. Sampling strategy

The primary sampling strategy for this qualitative case study was purposeful sampling, also referred to as purposive sampling (Eisenhardt, 1989; Erlandson et al., 1993; Patton, 1990). This sampling method is particularly relevant in studies - such as this one - that aim to develop emergent theory. The strategy facilitates a purposeful search for information and understanding about the research area including conscious attempts to gain complementary and alternative perspectives from knowledgeable informants (Erlandson et al., 1993). To this end, research participants included employees from different functional areas, geographies and hierarchical levels, as well as outside observers (Eisenhardt & Graebner, 2007). Outside observers included former employees, current and former consultants to the organisation, training providers and industry experts who provided insight, expertise and personal experience.

Purposeful sampling involved deliberately selecting particular individuals with unique knowledge, choosing particular settings such as mining sites where access to information about integration would be available; and choosing to attend events such as workshops and training meetings that were pertinent to integration. Each of these sources was purposefully sampled with the help of the primary informant (Gioia, Price, Hamilton, & Thomas, 2010). The primary informant is a knowledgeable manager within the organisation who facilitated the research process, helped me identify research participants with relevant knowledge with respect to the research question, coordinated access to interviewees, organised mine visits and acted as a soundboard for my emerging analysis during the research process.

Initial interviewees were purposefully sampled for their unique knowledge about relevant aspects of the organisation as well as their familiarity with the process of integration (Kulka, 1982). Snowball sampling (Carpenter, Mingxiang, & Han, 2012) was interwoven with purposeful sampling as research participants suggested other individuals with unique knowledge about certain aspects that were discussed during interviews. Although snowball sampling has been criticised for misuse and for being poorly justified in grounded theory studies (Pratt, 2009), it is increasingly utilised in case studies based on emergent phenomena and qualitative data (Anteby & Molnar, 2012; Battilana & Dorado, 2010; Jay, 2013; Ladge, Clair, & Greenberg, 2012). Snowball sampling involved a process of following up referrals from purposefully sampled individuals and discussing the referrals with the primary informant (Gioia et al., 2013). Discussions typically involved the primary informant's opinion on the individual's relevance as a suitable research participant based on their knowledge of the area of interests or their accessibility. On some occasions the primary informant suggested a different, more knowledgeable individual, based on the breadth or depth of experience, his/her unique perspective or accessibility. Emergent findings were periodically shared with the primary informant. This enabled feedback and increasing trust, which provided more diversified and higher levels of access into the organisation. The significant role of the primary informant is discussed in the *validity* section in this chapter.

The number of interviews in the study was guided by principles of naturalistic enquiry that does not prescribe sample size (Erlandson et al., 1993). In naturalistic enquiry, the richness of the information and the researcher's ability are far weightier measures for the meaningfulness and validity of insights, than sample size (Patton, 1990). Consequently, the number of participants in the study was not predetermined. A review of expert scholars opinions on the number of qualitative interviews that are enough in qualitative research, identify numerous factors on which sample size depends, including philosophical assumptions, the method, the purpose and nature of the research, the scholarly audience of the research and pragmatic considerations (Baker & Edwards, 2012). Data saturation is commonly used as an indicator that enough data has been collected for the purpose of the research (Guest, Bunce, & Johnson, 2006). Despite the ambiguity in this term, and the fact that it is often impossible or impractical to reach data saturation (Baker & Edwards, 2012), it is the most appropriate method for this study. The way data collection was structured during the research process was helpful in determining when enough data had been collected for the purpose of the research. Data was collected in different layers, starting with interviews that facilitated understanding of

the organisation, followed by interviews that illuminated the context of mining projects as well as interviews with individuals from different functions involved in E&SE integration over different hierarchical levels. The primary informant facilitated interviews with higher levels of management in stages so that I gained understanding of lower levels before interviewing higher levels of management within the organisation. At the point when the primary informant was happy to facilitate access to the organisation's executive leadership, I felt that I had enough data in order to analyse E&SE integration on the middle management level of the organisation – which is the focus of this study.

In addition to relevant knowledge and experience, participants' willingness, availability and consent influenced the number of research participants. One potential research participant ignored repeated requests for an interview and another withdrew consent after the interview took place and consent was signed. All other requests for interviews were granted and confirmed.

6. Data collection

Data were collected through interviews, observations and secondary data. The choice of interviews as the primary data collection method supported the objective of obtaining a rich narrative (Csarniawska, 2000) in a setting where the informant feels comfortable to share contextualised stories, and the researcher is able to probe research participants on relevant and interesting issues (Gioia et al., 2013). Interviews are commonly understood to be the most effective data collection strategy to enable the collection of rich data based on observable 'events' that are embedded in human experience (Eisenhardt & Graebner, 2007) and are therefore the primary data source for this case study. The interviews are qualitative, semi-structured and based on narratives, which give both the researcher and the respondent the opportunity for "engaged research" (Gioia et al., 2013, p. 19). Interviews involved conversations about historical and current events pertinent to the process of integration and provided opportunities to probe research participants when issues of interest emerged in the interview (Gioia et al., 2013).

Research participants were invited to participate by the office of the primary informant. The non-disclosure agreement and the consent form were attached to participation requests, together with a description of the research, the ethical clearance and the purpose of the interview. Interviews were scheduled for one hour each and the majority ranged between 45 and 90 minutes.

The interview protocol (Yin, 1999) was used as a guide during the interview process and included an introduction to the researcher and the interview purpose and process, including an explanation of research consent, confidentiality and anonymity (see Appendix one). Permission to record the interview was obtained at the start of each interview, and signed off formally at the end of the interview when participants could indicate their desired level of anonymity. This was helpful in building trust and allowing participants to converse freely. Interviews were followed up by a courtesy email, following up on referrals to other potential participants and secondary data sources that were mentioned during the interview.

Interview discussions typically commenced with an account of the participant's professional background and history within the company and the industry, which aided understanding of the breadth and depth of the participant's experience. Interview questions included exploring participants' knowledge and experience of integration at the company; their experience with integration at the organisation and their opinions about enablers and constraints of integration; and their understanding of the organisation's identity and purpose. Specific and interesting issues that emerged from the interviews were explored in greater depth. Each interview was unique and often included examples and narratives of projects in various stages of planning, execution or operation. Different interviewees frequently referred to similar examples during interviews, thereby providing a rich narrative as each participant shared unique insights from their own perspective. Personal rapport as well as taking time to build trust ensured authentic conversations. Trust-building (Perry, 1998) was facilitated by offering each interviewee the opportunity to delay or refuse agreement to record the interview, and to specify their preferred level of anonymity. Their choices were confirmed after the interview, which allowed them to talk freely. Interviews were recorded on *Audionote* software and stored, and backed up on personal equipment. Some data were labelled sensitive or confidential or "off the record", during which time the recording was paused.

Interviews occurred at different time periods between three days and a month at a time. Data was collected during eight research visits to Johannesburg, over a period of seven months from mid September 2013 to mid April 2014. The majority of interviews were held at the company's South African headquarters in Johannesburg. Other interviews took place during mining visits or at off-site meeting places, convenient to the interviewee. Table one outlines the interview and observation data and appendix two records the full list of interviews, influential discussions and observations, and their reference codes. In

total, 62 interviews and discussions influenced the data collection process, of which one interview was withdrawn, and two preliminary interviews, 10 primary informant interviews and one influential discussion were not formally included in the analysis. The primary informant interviews were excluded to minimise the impact of the primary informant's influence on the analysis. This decision is described in more detail in the section on research limitations. The influential discussion was off-the-record, however, it had a significant influence on my understanding. Data collection involved approximately 95 hours of interaction with personnel and consultants at a number of levels within the company, two hours of preliminary interviews and 20 hours of observation during workshops, meetings, training days and during three mine visits. In addition, time spent working from the head office, and informally interacting with employees in between interviews and over meals in the employee lunch-area, facilitated understanding of the research context.

Table 1: Summary of interview and observation data

Interviews	Number
Formal, recorded interviews, with consent form signed (including two repeat interviews)	42
Formal, unrecorded interviews, with consent signed	1
Formal, recorded, consent not signed but permission granted to use the data to influence thoughts	1
Informal interviews in official setting, no formal consent signed, but employees received researcher for the purpose of research and had informal discussions with researcher for the purpose of research. This data is not quoted but influenced the researcher's thinking and lends support to other findings	4
<i>Formal, recorded interview with consent (consent withdrawn and data removed)</i>	1
Total number of interviews	49
<i>Preliminary, exploratory discussions that took place prior to formal data collection with the intention to establish the suitability of the company as a primary case</i>	2
<i>Informal, unrecorded discussion with an manager who influenced my thinking</i>	1
<i>Primary informant meetings, unrecorded, notes taken (excluded from analysis)</i>	10
Total number of interviews and influential discussions that influenced the analysis	62
Observations	
Training, workshops, meetings	5
Mine visits	3

Secondary data sources were collected from research participants and through field notes and recordings during non-participant observation at meetings, training, workshops and mine visits. During interviews, research participants would often refer to different types of sources or suggest that I look at particular sources to enhance my understanding. These sources were requested at the time of the interview and were either provided

during the interview, or sent by email or by post, after the meeting. These secondary data sources included reports, strategies, process-manuals, regulations, annual reports, media articles, web pages, videos and training materials. A non-participant observation involves meetings, workshops, training and mine visits. I attended a meeting that gathered internal members and external partners of the project development process around the topic of sustainability. I visited two open-cast and one underground mine over three days where I experienced the mining context and interviewed numerous employees from the general manager to miners on the coal face. During one of the mining visits, I observed on-site safety training for miners on a mining site. I also attended three workshops where I participated as a delegate. These include a compulsory safety induction for new employees, safety training for leaders who set the example for safety on mining sites and a training workshop for a particular business unit on the Sustainability Valuation Approach (SVA) - the company's methodology for integrating E&SE dimensions into the project development process. The one-day SVA training day was particularly insightful as it involved an afternoon workshop that mirrored – albeit imperfectly and in an ideal setting - the E&SE integration process. The opportunity to participate in such a process enhanced my understanding of the E&SE process and I experienced some of the tension between different individuals, with different perspectives. Data from these observations were gathered from official meeting notes and presentation slides that followed the meetings by email, or by personal notes taken during the events, or by interviews with presenters during or after the events. A data inventory was kept that recorded all the primary and secondary data sources during the data collection period (Gioia, Price, Hamilton, & Thomas, 2010).

7. Data analysis

The analysis relies on process-oriented principles and techniques aimed at building theory based on qualitative data (Gioia et al., 2013; Langley & Abdallah, 2011). As discussed earlier in this chapter, the analysis placed much emphasis on connecting strategies, in addition to categorical strategies (Maxwell & Miller, 2008), that are emphasised in grounded theory approaches (Corbin & Strauss, 2008). *Categorising*, otherwise referred to as *fragmenting* or *coding* (Corbin & Strauss, 2008), refers to the process of separating the data into fragments and grouping data together into “buckets” defined by similar thematic content. Fragments are further dissected in a process referred to as *coding on*, where new discoveries are made within existing categories during the analysis process and fragmented into new or sub-categories.

Connecting strategies are based on contiguity relationships among data and data categories. As the quote below indicates, it implies two different types of analysis based on different nuances of the concept of contiguity. Maxwell and Miller (2008) explain the different nuance between the two types of connecting strategies, below.

The categories generated through coding are typically linked into larger patterns; this subsequent step can be seen as contiguity-based, but the connections are made between the categories themselves, rather than between segments of actual data. In addition, using connecting techniques only on the categories, rather than the data, results in an aggregate account of contiguity relationship and can never reconstitute the specific contextual connections that were lost during the original categorising analysis. (p. 467).

Contiguity is a term used to denote a specific type of analytic technique that identifies relationships between contextual data that involves identifying relationship between data and between concepts and categories by “juxtaposition in time and space” instead of identifying similarities and differences as is common in categorising and fragmenting techniques (Maxwell & Miller, 2008, p. 462). Two types of connecting strategies are applied in this thesis. The first connects categories after data has been fragmented and the second strategy connects actual text or data within categories. Both strategies are independently important to this explanatory analysis. The first allows reduction and connection of categories during the analysis process and the second facilitates actual contextual relationships between data that can often be neglected during the former (Tesch, 1990).

All interviews were personally transcribed verbatim to ensure accuracy, to get close to the data and in order not to breach the NDA. The transcription period was characterised by memo-writing, posing questions to self, making comments, noting insights and drawing diagrams to start making sense of the data on a conceptual level (Miles & Huberman, 1994). During this process I learnt how to use NVIVO 10 qualitative software (Bazeley & Jackson, 2013) and customised the database to facilitate my analysis process, and imported all relevant data into the database. NVIVO facilitated a systematic method of obtaining consistency and transparency in the fragmentation process, and easy retrieval and verification of the source data. The advantages of data organisation, tracking, and consistency outweighed the potential danger of distancing the researcher (Baxter & Jack, 2008).

The categorising analysis involved reading interview transcripts and fragmenting each interview in its entirety. Fragments were placed into thematic categories that were named to reflect the core content of the group of data. This two-month long categorical analysis process gave rise to 27 thematic categories with 266 sub-themes containing over

2700 fragments. The next step of the categorical analysis involved an iterative process of reading, connecting, and further categorising each of the thematic categories that were relevant to answering the research question. Sub-categories were re-organised to avoid duplication and to enhance sense making. In order to retain important nuances, similar thematic categories were coupled, rather than merged during the early stages of the analysis. Each of the thematic categories, together with their sub-themes, were scrutinised to ensure that fragments 'fit properly'. The nature of this type of analysis is iterative, and I therefore revisited fragments that were categorised early on in the categorisation process, to ensure that emerging categories included data from all interviews.

Analysis of the categories started with the most prolific thematic category, namely 'integration'. Integration was categorised into 'projects', 'operations' and 'context'. Projects referred to all fragments regarding the organisation's formal E&SE integration process; 'operations' referred to all other fragments that pertain to integration but not specifically related to projects, and 'context' categorised all fragments that explained the contextual environment that framed integration. Each of these sub-categories of integration were further categorised into sub-categories named 'enabler' and 'constraint'. Each of the sub-categories were analysed individually, culminating in a complete summary of findings document that made sense of the categories and supported findings with fragments of data. This document became a reference point throughout the data analysis process as well as during the iterative modelling and writing stage, when I referred to it constantly to ensure that I was staying true to the data as I developed my arguments.

Following this divergent process, in order to manage the magnitude of data, I focused on data that illuminated the research question. Consequently I focused on the intentional, facilitated process of E&SE integration and on data related to organisational identity and purpose. These themes were also the primary focus of a large number of research interviews. The next step involved building data structures from the categorised fragments using tables and spread sheets that facilitated the process of reducing data from fragments that reflect the participants' voice, to themes that reflect groups of data, to concepts that reflect the researcher's voice (Gioia et al., 2013). Every step of the analysis involved an iterative process of identifying contiguity-relations between data fragments within categories to understand how they are connected, and then following the same process between thematic categories (Maxwell & Miller, 2008, p. 470). This process significantly reduced sub-categories within two focus areas as the categories converged

into key concepts that facilitated sense making of the data (Gioia et al., 2013). Each data structure showed the trail between primary data and the researcher's interpretations, ensuring a close fit (Brown & Eisenhardt, 1997). An overview of the data analysis process is tabled in Appendix three.

Whilst the methodology of developing data structures by induction (Gioia et al., 2013) facilitated understanding among some categories, data relating to other aspects and within certain categories – such as *identity* and *purpose* - were not easily or adequately understood using this methodology. To this end connecting strategies were employed to understand the identity and purpose categories and to compare the organisation's integration process before and after the introduction of an intentional integration process. The analysis of identity and purpose by using connecting strategies between the two categories, revealed an interesting relationship between identity data and purpose data. The identity analysis revealed significant identity ambiguity as a result of different meanings associated with the identity labels. "Identity labels represent the symbolic expression of how organisation members collectively answer the question 'who are we as an organisation'" (Corley & Gioia, 2004, p. 177). I used connecting strategies, such as the creative use of tables, to facilitate sense making within and between the labels. Participant comments that represented oppositional statements about the same identity label were juxtaposed. I used a table that resembles the shape of a bow tie (see Appendix 15) to reduce oppositional participants comments, within the same identity label, to an aggregate dimension. This method, based on the method applied in Nag, Corley, & Gioia (2007, figure 2, p. 828), helped me to understand the tensions inherent in corporate sustainability and provided insight on some of the complexity related to E&SE integration.

Descriptive data about the organisation's project process before and after the introduction of the formal integration process were analysed using comparative analysis (Eisenhardt, 1989). Connecting strategies were also used to identify data that illuminated how the formal process of E&SE integration differed before and after the introduction of the sustainability valuation approach at the focal company. A closer look at the data structures as a whole, revealed numerous comments referring to the time periods "before" and "after" as well as related concepts that refer to time. These comments reflected the difference between E&SE integration before and after the introduction of the organisation's intentional integration process. These comments were grouped by connecting data within the different data structures, and interview transcripts, and juxtaposed in a table (see table two) to allow comparison. The comparative analysis

focuses attention on the differentiating dimensions of interaction during the E&SE integration process. Five distinguishing factors were further explored in relation to the before and after process. These are corporeal dimensions, temporal interaction, cognitive dimensions of interaction, dimensions of precedence and identity dimensions. This step of the analysis facilitated understanding of the dimensions that enable and constrain integration. Cognitive, temporal and identity tensions constrain the process and the analysis converged on three structural and three procedural enablers of integration, as well as three practices that enable the management of tensions that emerge during the process.

During the next phase of analysis, connecting strategies were used to identify how these dimensions enable the formal process of E&SE integration at AA. This step involved scrutinising the original data fragments that informed these theoretical concepts in order to identify temporal and spatial dimensions and to facilitate understanding of how they are connected and how they should be sequenced in the development of a process-model. These were teased out in an iterative process of reorganising the relevant data-structures, and the emerging process model, to provide a coherent picture of the findings.

Although naturalistic inquiry does not aim for generalisation, but rather aims to understand situation-specific meaning (Eisenhardt & Graebner, 2007), the development of a parsimonious process model, as is common in the Gioia-method, facilitated theorising about relationships among concepts that emerged from the analysis process. Furthermore, the model enhances the study's relevance to practice (Bansal, Bertels, Ewart, MacConnachie, & Brien, 2012) by enabling readers with similar contextual environments to easily identify applicable, portable principles (Gioia et al., 2013).

Secondary data were referred to throughout the analysis, primarily to enhance understanding and in some instances to provide a thicker description of the context during the writing phase.

The final step of the analysis process involved enfolding the findings with literature (Eisenhardt, 1989) and discussing the relevance of the findings in the context of extant literature. This process identified and explained the theoretical contributions of this thesis.

7.1. Validity

Methodological choices were taken to ensure that the research process leads to a credible, relevant and rigorous result - a valid study of high quality that is coherent throughout (Edmondson & Mcmanus, 2007; Maxwell, 2009). The three foremost validity criteria for the constructivist paradigm, namely *prolonged engagement*, *rich data* leading to a *thick description*, and the *search for disconfirming evidence* (Creswell & Miller, 2000), form the basis of validity claims in this study. In addition, the four dimensions of trustworthiness in qualitative research (Lincoln & Guba, 1998), namely *credibility*, *transferability*, *dependability* and *conformability* are briefly discussed below and interweaved into the section that discusses the research paradigm of this thesis (Creswell & Miller, 2000). In addition, potential concerns relating to the role of the primary informant and the researcher are addressed.

Engagement with the company started in July 2013 with discussions and preliminary interviews, and continued with formal data collection from mid September 2013 through to mid April 2014. *Prolonged engagement* with the company allowed the collection of multiple perspectives (Kreftling, 1991) thereby enhancing accuracy of findings (Creswell & Miller, 2000; Maxwell, 2009). Repeated engagement also fostered trust and rapport between the researcher and participants (Creswell & Miller, 2000, p. 128), particularly with the primary informant and the team that facilitated the research process. The study gathered *rich data* from in-depth interviews that were recorded and transcribed verbatim, to ensure accuracy (Maxwell, 2009), and it provides a *thick description* that allows readers to judge whether findings can be applied to other contexts (Creswell & Miller, 2000). In this way portable principles and theoretical concepts can be extended to other cases with comparable contexts. Therefore, the study offers qualified *transferability*, which is not based on sampling strategy relevance, but on similar circumstances in comparable contexts (Maxwell, 2009). The research process involved an active *search for disconfirming evidence* (Creswell & Miller, 2000) and alternative perspectives in order to avoid confirmation bias (Eisenhardt & Graebner, 2007). Different research participants often offered different perspectives on the same example. These were noted and probed to provide a more holistic picture. The process also involved a conscious attempt to include a broad spectrum of hierarchical and disciplinary perspectives. As reality is multi-faceted and complex, the search for disconfirming evidence in constructivist research supports credibility (Creswell & Miller 2000). *Credibility* is an external judgement concerned with whether the research is judged credible in the eyes of the research participants (Guba & Lincoln, 1982). To enhance credibility, the primary informant was

invited to comment on draft articles based on the researcher's interpretation of the data. In addition, the focal company read an earlier version of this document to ensure that the terms of the non-disclosure agreement have been upheld. During this process, factual errors were addressed. This presented an opportunity to confirm whether the focal company judges the research as credible, thereby enhancing the *conformability* of the study (Guba & Lincoln, 1982).

The researcher's impact on the setting and the interviewees is unavoidable in qualitative research (Maxwell, 2009). Rather than limiting my impact, I exploited my experience and identity (Maxwell, 2009), being sensitive, responsive and adaptable during the research process (Guba & Lincoln, 1982). However, I was also self-aware and "critically subjective" (Reason, 1998 in Maxwell, 2009, p. 225), remaining consciously aware of potential bias and correcting it, where it became obvious. I address researcher reflexivity by being honest with myself and the reader so that the reader can identify what influence my personal involvement has had on the process and outcomes of this study (Creswell & Miller, 2000).

A concern which needed to be considered throughout the study was the influence of the primary informant (Gioia et al., 2013) and the risk of the researcher "'going native,' - being too close and essentially adopting the informant's view, thus losing the higher-level perspective necessary for informed theorising" (Gioia et al., 2013, p. 19). This includes the potential influence of the primary informant on the analysis, through subtle means such as facilitating access to certain interview participants and denying access to others with different perspectives. This was addressed primarily through awareness and conscious analysis of the meetings and interactions with the primary informant to ensure independence, rather than inter-dependence (Gioia et al., 2013; Langley & Abdallah, 2011). The primary informant's influence was also limited to facilitating the research process and providing meta-commentary in order to enhance the researcher's understanding (Gioia et al., 2010). This was achieved by muting his voice during the analysis by excluding meeting notes from 10 meetings with the primary informant, from the categorical analysis. As I built rapport and trust with the primary informant, it was difficult to maintain autonomy and boundaries, and I was acutely aware that this could unduly influence my judgement as an independent researcher. In order to minimise this risk of bias, I consciously reminded myself to remain critical through personal mindfulness, reflective field notes and guidance from my supervisors.

8. Limitations

The study is first of all concerned with an ideographic account of the case, accompanied by a thick description to aid understanding of the process of integration. However, it also aims to make a theoretical contribution through extracting theoretical concepts and portable principles that are built into a conceptual process model that builds emergent theory. Scholars have debated whether or not theory from a single case can be generalised. I concur with Gioia and colleagues' (2013) departure from the pure interpretivist stance that constructivist studies are solely idiosyncratic because of their unique context and focus on individuals during data collection. They argue for qualified or limited generalisation, when there is relevance to another domain, and enough evidence to allow contextual comparison (Gioia et al., 2013). Consequently, portable principles can be transferred to other cases provided the reader familiarises him/herself with the contextual sensitivities provided in the thick description (Guba & Lincoln, 1982).

A recognised limitation of the Gioia-method involves the lack of alternative explanations (Langley & Abdallah, 2011). This study has gone to great lengths to seek out alternative opinions in the data collection phase (Yin, 2009); however, no alternative explanation for the findings is offered. The study is not explicitly designed to search for more than one explanation; however, it does not negate alternative explanations – either from a different research paradigm, or from a different interpretation of the facts. The purpose of the thick description and the rich data is precisely that readers can make their own conclusions and differ, where appropriate, with the author.

9. Ethical considerations

An ethical research process is important to both the researcher and the participants. However, it is also critical to ensure trust and rapport between the researcher and the focal organisation, and its research participants. To this end the research project received ethical clearance from the University of Cape Town Graduate School of Business Research Ethics Committee. In addition, the university signed a non-disclosure agreement with the company, which the researcher acknowledged and adhered to. Each research participant was made aware of the ethical clearance and the non-disclosure agreement and their willingness to participate was confirmed during the interview process. Research participants, who were formally interviewed, signed a research consent form, which included information about the researcher, the research purpose and the study (see Appendix four).

Formal interviews were preceded by an invitation from the office of the primary informant and the interviews were held in a venue of the research participant's choice. The interview process included an opportunity for the interviewee to indicate their desired level of anonymity and to give consent to the recording. Interviewees were also invited to ask questions during the interview process. At the end of each formal interview, consent was confirmed to ensure that interviewees were comfortable with the recording, based on what was discussed during the interview, and that they were happy about their choice of how their comments may be referred to within the thesis. Confidential comments during research interviews were treated as information to enrich my understanding, without directly using the data. During interviews when participants indicated that information they were about to share was confidential, I stopped the recording in their sight and refrained from taking notes so that they would feel comfortable to continue to share and to ensure that those comments would not be used during the data analysis. Interviewees' desired level of anonymity were addressed by allowing them to choose their own title for the purpose of in-text referencing. A number of interviewees requested confirmation of any direct quotations; some asked if they could have access to the findings and outcomes and others asked that publication proceeded in line with the company's communications policy.

One interviewee, who formally agreed to the interview and to the recording of his interview, withdrew consent when he was given an opportunity to view the content of his interview to verify his transcript. Following the request for withdrawal, the audio file, transcript and all references from the interview were removed from the analysis database.

Interviews were recorded on *Audionote* software and stored on the researcher's personal iPad, transferred to a personal laptop and backed up on personal equipment in Cape Town and in Johannesburg. Transcriptions were treated similarly and all data were treated with the same personal security and safety precautions as the researcher treats personal data, in accordance with the stipulations of the non-disclosure agreement.

In summary, this study applies a constructivist/naturalistic research paradigm to explore the research question: *How do organisations integrate predominant economic dimensions, on the one hand, and social-ecological dimensions, on the other?* from the vantage point of research participants' lived experiences (Denzin & Lincoln, 2008). The study uses an inductive research logic that allows the 'data' to speak. The research design is based on Maxwell's (2005; 2009) interactive research model where all the elements of the research process are interactively connected and inter-dependent. The interactive research

process (Edmondson & Mcmanus, 2007) is a flexibly structured. The design allows for adaptation during surprises and in-situ discoveries in the research process. The research strategy is a process-oriented (Langley, 1999; Langley & Abdallah, 2011) single, revelatory case study (Gioia et al., 2013; Yin, 2009). Data are qualitative, primarily based on in-depth interviews and observations, and supported by secondary data. The sampling strategy combines purposeful sampling (Patton, 1990) and snowball sampling (Carpenter, Mingxiang, & Han, 2012) during data collection. Data analysis is based on categorising and connecting strategies (Maxwell & Miller, 2008) designed to support understanding of the process of integration and to facilitate the process of building theory grounded in qualitative data (Gioia et al., 2013). Limitations of the research method and the research process, as well as the ethical dimensions of this research project were addressed and discussed in this chapter. Taken together, this chapter motivates the methodology that was employed to study the research question.

Chapter Four: Findings

This chapter reports on the findings of an exploration of E&SE integration at AA through a process-lens and through an identity lens. The chapter focuses on the project development process at AA and specifically, how E&SE dimensions were integrated, before 2009 (hereafter referred to as the *before process*) and after 2009 (hereafter referred to as the *after process*). 2009 was the year in which an intentional E&SE integration process was initiated. The chapter starts by briefly highlighting the history of formal integration of E&SE dimensions in project development at AA, as well as the contextual environment that enabled integration. This is followed by a comparative analysis of the before and the after process and an exploration of the differentiating dimensions, including the tensions that constrain integration and the enablers that facilitate integration in the after process. The chapter culminates in a process model of E&SE integration that emerged throughout the data analysis process.

1. History of integration

Before E&SE integration became a business imperative in 2009, AA had set up different departments for sustainability, including sub-units for safety, health, environment - water, climate change and energy - as well as government and social affairs. The AA strategy had four pillars, one of which was safety and sustainability. Company-wide communication and policies included sustainability and E&SE integration imperatives; however, the company was experiencing significant challenges with respect to projects, and decision-making within projects. Many projects failed to meet budgets and time lines.

Following the restructure in 2009 a new sustainability team grappled with how typical issues of sustainability and safety could be considered across functions. The challenge was to develop a strategy that would re-design the organisation in such a way as to embed sustainability. Pertinent to this challenge was the area of decision-making and how sustainability could be embedded in key decision-making processes, which became the ambition of the then head of integration, a new position that formed part of the Anglo Group Safety and Sustainable Development department.

The success of the integration objective was predicated upon a value proposition that would attract attention and receive approval from the AA Group. After considering the mining value chain, the integration team identified four overarching processes, Strategy, Business Development, Operations and Project Development that each played a significant contributing role in the process of *making sustainability everyone's business*. This slogan

became the integration team's tag line in the early phase of preparation and planning. The team agreed that project development was the area where they could make the biggest difference as they could influence a mine design. Since project decisions at the time were biased towards technical and commercial considerations, the opportunity to develop a way to articulate other types of value seemed like the biggest "game changer" (MSD4).

The team's goal was to get sustainability on the agenda and to stay on it. In their quest to design 'something' that would help the company integrate sustainability into key decisions, the team agreed on specific design principles that were pertinent to their success. Two of the design principles included *keeping it simple*, and *integrating into existing processes*, which meant working with processes that were already in existence, regardless of how good or effective they were.

Members of the integration team found that colleagues did not know what integrating sustainability was all about. They found that decision-making was pertinent to integration and that decision-makers needed to understand the potential repercussions of making decisions without all the information. They claimed that integration was about *how you make sustainability strategy sustainable*. Consequently, the integration team avoided working only with the Safety and Sustainable Development (S&SD) teams but rather worked with all teams in the project development process since each decision had a technical, commercial and sustainability component. The team repeatedly marketed their objective with a one-page document and had many engagements, often repeat engagements over 18 months before members of the organisation started thinking that integration was a "cool" (MSD4) concept. From that point on, the idea, concept and processes of integration grew organically.

2. Contextual environment

The contextual environment at the time is pertinent to understanding why AA initiated the formal integration process. The study identifies four aspects of the contextual environment that focused attention on intentional E&SE integration within organisational processes. These were the changing societal expectations, changing regulation, enabling leadership and failures resulting from social and environmental dimensions with significant economic consequences.

Changing societal expectations. The impact of change in societal expectations over time is a catalyst for change as it compels attention to decision-making priorities and sets the

stage for E&SE integration in organisational decision-making processes. A manager recalled a telling account of how the changing societal expectations impacted on E&SE integration in business decisions.

I often use an example of a guy who retired at [an AA] smelter... He worked his whole life at the smelter. In the 1950's, [the] smelter was built... and it was commissioned and that stack was literally spewing out smoke every day. Everyone in [the town] was so proud that this smelter has been built there because it was progress, jobs, and money coming into the community. These guys were all heroes working at that site. And then, society's perception started to change and they realised that actually that is pollution coming out of there and it is affecting the kiddies health and this and that. The pressure over time grew and then came environmental legislation and then there were NGO's and activists to the point that this guy then actually drove to work in the morning and when he saw this stack belching out, he just knew that he was now going to a workplace that is doing something wrong and he was going to be in a lousy space because the NGO's were going to be phoning him and complaining and management from HQ was going to be phoning to find out what the hell is going on ... to the point that he felt embarrassed to work at the smelter. Then we put this whole new plant in place with new technology... that then greatly reduced our emissions again and then he was proud again. So that just shows you how society's perceptions change. That has always been a powerful story for me how business responds and how we as managers in the business change our own perceptions over time. And you may well find that we are doing stuff right now that in 20 or 30 years time society is going to turn around and say 'what the hell were you guys doing?' Just because society's perceptions of what was right and wrong changes. (SMBU3).

Changing regulation. Regulation tracks changes in societal expectations and provides the impetus for organisational change through changes in permitting requirements. The consequences of not complying with regulation focused organisational attention on sustainability issues that had been regulated. In addition, the pace of changing regulation compelled the organisation to consider not only the current, but also future direction of regulation, in project planning. A project manager explained how failure to consider changing regulation affected a mine plan and reduced the income-potential of the mine by 10 years.

In the past we have been allowed to mine through [wetlands] but as time has gone on legislation has become more stringent and it is now actually very difficult to mine through a... wetland... Now it is almost impossible to get that. When we started [this project] we were still assuming that we would have permission. So we designed our mine through all those pans and other wetlands. It subsequently turned out that water affairs would not give us permission to mine through some of those pans. So the whole mine plan has had to be radically changed to avoid some of those areas and that has impacted on the business case. So instead of having 40 years of coal to supply the power station, we have only got 30 years. (PMBU1).

Project failures. AA was experiencing significant project failures that resulted in financial losses and delays. Project failures are categorised as projects that do not “come in on time or on budget”. An internal investigation into significant project failures revealed that many of these failures were due to sustainability issues. A manager said, “we got bitten in the behind a couple of times with projects that had very good economic business cases but

got delayed for years on end because of the sustainability issues that were not properly dealt with" (M4). The manager recalled this period.

There were significant delays on projects due to sustainability issues and not getting our license to operate because of community issues [and] opposition or because we had not foreseen a specific issue or because the designs we thought were the best were not accepted by the communities. So there were massive delays on key, key projects. And it has not gone away. How we design those projects had to change... We found that sustainability considerations - safety, health, communities, environment, social, license to operate... - were considered very, very seldom in concept phase and if considered, it would be very late in pre-feasibility phase. (M4).

A subsequent review of the company's risk register in 2012 revealed that more than 50% of its capital projects, comprising more than 83% of its capital assets, were experiencing significant sustainability issues. These sustainability issues included greater stakeholder awareness of the impacts of mining and greater stakeholder voice to address these concerns, as well as changing environmental pressures in different mining geographies such as community opposition to the use of local water sources. A manager in S&SD explained how water-issues affected projects.

What was happening is that we were not being able to respond appropriately, and it was starting now to affect the way we did our business. Our businesses were not getting licenses. They were not getting their approvals for the projects to go ahead. There were significant delays because of that. There were sites where water was potentially being restricted... (MSD1).

A manager in S&SD commented on the significance of the context of significant project failures that "were not going away" as an enabling contextual dimension of the process at a point in time.

The other thing is that the organisation was ready for a change. If we started the process three years earlier it would have failed. I think because Anglo was at a point where there was so much stress and pressure related to getting projects going. We knew we had to do things differently. (SMD4).

Costly project failures as a result of sustainability issues were not unique to AA. Mining companies in the industry were experiencing project delays and financial losses relating to social and environmental dimensions. At the time of the research, a manager in S&SD noted that sustainability issues impoverished the ICMM members in the region by US\$50bn. Member comments suggest that project failures, and the severity of their impact, focused organisational attention on the need for change.

Enabling leadership. The study finds that understanding the 'why' of integration has a cascading hierarchical effect from the top leadership downwards – which enables the process of integration to infiltrate the organisation. A manager in AA commented on the enabling role of leadership.

CEO leadership is the first and most fundamental point in making it happen. Secondly, as the organisation matures, so it becomes very obvious to the CEO as to what value it [sustainability] adds. And they 'get it'. In a sense it is about 'getting it'. So they no longer argue about what the business case is. They actually get it and they drive it. (M1).

A manager in S&SD commented on how important it is that everyone in the organisation "gets it" – referring to why sustainability is important. The manager suggests that corporate sustainability involves a change in identity that starts with top leadership and cascades down.

You can't get the organisation to be different unless the identity of everyone changes. So [the top leadership], they get it. They may not 100% inherently understand how they need to make decisions differently but inherently they know that it is important and they want to do the right thing. I am convinced of that. But you've got to permeate that down the organisation's identity – that is when everyone can touch it and feel it and see it. It is a bit circular. You need to start the movement to move in that direction to get the identity and once you have that identity established, everyone else who comes in will then be swept into that identity and will go along with it. (SBU1).

Leadership creates an enabling environment for integration by asking questions and mandating action. They create the impetus for organisational action. A manager in S&SD explained leadership's vital role in creating an enabling environment.

None of this happens in any business without focused, committed leadership. I have a colleague in another major company who is struggling to get any traction on this. They have all the tools, they have got all the right stuff there but he is struggling beyond belief. Why? Because his CEO does not 'get it'. (M1).

At AA, leadership played a significant role in enabling a dedicated unit to explore and integrate sustainability into business process. A senior manager set up a dedicated unit within the sustainability function and mandated them to identify the key areas where business processes were being changed. The unit's mandate was to ensure that sustainability was embedded within those process changes. The concept of integration permeated the team's discussions and they named the function "Integration". The integration team was mandated to rethink how sustainability could be integrated.

It is evident that the four aspects described above had a significant influence on the organisational attention to E&SE integration.

2.1. Initiating a formal process of E&SE integration

During the period of 2009-2010, the project development process at AA was being redesigned and the company was doing operations reviews that involved identifying the organisation's value drivers. Initially, the sustainability department was not included in these reviews. However, a member of the new integration team championed the cause for sustainability value drivers to be part of the operations review process in order to make

the process of valuing sustainability explicit. The question they tried to answer was *how could internal drivers be influenced by tweaking sustainability dimensions?* Nine sustainability value drivers were identified covering the areas of energy, water, climate change adaptation, biodiversity, health and safety, license to operate, land stewardship, waste management, and communications. They proposed that between 5 - 10% of operating profit could be released if these sustainability drivers were managed correctly. They argued that if this value could be unlocked internal to the organisation, other issues could be unlocked external to the organisation.

The integration team partnered with a consulting firm to develop a process that formally integrated E&SE dimensions in the projects development process. The integration team set up the governance requirements, including an executive sponsor and an influential, cross-functional steering committee. This process was named the *sustainability valuation approach* (SVA). The first part of developing the integration process was theoretical - a 70-page document outlining how different E&SE dimensions should be integrated into the organisation's existing projects development process. Guidance on the value drivers was provided in the form of questions that would help the cross-functional team consider different value drivers. Thereafter, the SVA was tested and refined by applying the SVA methodology to the historic decision-making process of two existing projects that were undergoing significant challenges related to sustainability issues. The pilot phase revealed that certain options had been prematurely discarded in the decision-making process for technical and financial reasons. In retrospect, however, when longer-term impacts of SE dimensions of the project were considered, those discarded options were viable. Based on the success of the pilot phase the project sponsor and the project steering committee acknowledged the value of the SVA and decided to formally integrate it into every business unit, as an integral part of the company's project development process for major capital projects.

E&SE integration is not the result of a single decision on the middle management level of the organisation. Instead, it is a process involving between 12 and 20 different role players with different perspectives. The project development process can take as little as six months for processes that seek to make amendments to existing plans, and up to 20 years for major projects. A manager commented on the project time frames.

I've just come from a project that was recently approved that was discovered in 1995 - so that is a 20-year cycle from it was discovered. That is not abnormal. You ask people to put in an investment to look for something and they probably started looking 10 years before that. It might be 30 years from when you start looking for minerals till you eventually start putting in the real money and putting in the cash flows. (SMD1).

The intentional process of E&SE integration altered the way in which AA integrated E&SE dimensions. Research participants commented that participants of the formal E&SE integration process have better understood E&SE dimensions and that some PMs have changed their attitudes towards the process, their thinking and their perspectives (see Appendix five).

3. Comparison of E&SE integration before and after the intentional E&SE integration process

A comparative analysis of E&SE integration revealed the differences before and after the introduction of the intentional E&SE integration process. These differences were summarised in table two below. Member quotes that support the analysis were analysed in data structures in Appendix seven and eight.

Table 2: Comparison of E&SE integration before and after the intentional E&SE integration process

Before process	After process	Differentiating dimensions of interaction
Members of the cross-functional project development process seldom or never gather in person	The process involves face-to-face interaction between members from different functions	Corporeal interaction
E&SE dimensions are considered separately and in sequence	E&SE dimensions are considered upfront and simultaneously	Temporality of interaction
Interaction of E&SE dimensions is limited to like-minded functions	The interdependence between different E&SE dimensions are explored	Cognitive dimensions of interaction
The decision-making process quickly converges on a single option, focused on economic dimensions	The process considers E&SE dimensions and develops and values alternatives in a common language before converging on a single option	Dimensions of precedence
Members of the cross-functional project development process are not committed to participate in an integrative decision-making process	Members of the cross-functional project development process participate in an intentional E&SE integration process	Identity dimensions

The comparative analysis revealed five aspects of interaction that distinguish the before and the after process of E&SE integration. These are corporeal interaction, temporality of

interaction, cognitive dimensions of interaction, dimensions of precedence and identity dimensions. These dimensions are further explored in the sections below.

3.1. Corporeal interaction

The study finds that corporeal interaction is pertinent to E&SE integration. Corporeal interaction involves the physical presence of members from different functional areas, representing E&SE dimensions, in the same location.

In the before process, despite organisational imperatives to work in a cross-functional manner, projects were often developed without corporeal interaction between individual representatives from different functions. An employee in S&SD bemoaned the bizarre situation that projects were often developed in a silo-approach despite explicit project standards that dictated a cross-functional approach.

A lot of our difficulty... was the silo approach that is endemic in Anglo - and I think still is - but it is improving. Although the project team and the [Anglo projects standard] clearly states that when you make a decision, you have to have all the subject matter experts in the room, it was not always happening. So we had to make it very explicit in our process. 'Guys, when you are looking at your project context workshops and when you are looking at what are the value-drivers and key issues on this project, you need to have all those disciplines in the room - whoever you needed there.' And as bizarre as it sounds, it was just not always the case... it was not always happening. (ESD2).

Table three below, consists of members comments that illustrate the organisation's silo approach.

Table 3: Member comments about the silo-approach at AA

"We very much still have a discipline approach which is not helping with integration." (M8)
"The before process (and there are still aspects of this that take place) is very clearly a group of engineers sitting in a room by themselves, figuring out what they want to do and then coming to the environmental, safety and community people saying 'This is what we are doing, tell us what the risks are but basically this is it... this is what we are going to do'." (PMBU1)
"You can leave the engineers to do their work and they come up with all these weird and wonderful technical solutions - to discover very late in the process that the solution might not be acceptable from a societal point of view. Or, from a legal point of view." (PMAA)
"Where we are battling at this stage is that we are too siloed. As long as your PM is just being mechanistic in the way that they are managing... it is going to remain within silos." (SMBU3)

Perhaps one of the most revealing quotes, below, makes the tension between the different functional areas explicit. Although it takes a historical perspective with respect to the changes within a business unit in AA, it exposes the tension between different functional areas.

The company was set up in a massive silo organisation... and I would say S&SD started operating in a matrix way where we would say, 'well if this is a good way to do something in safety, we must do it across the business' - that was a big culture shock for people. Because people do not want to hear: 'next door they do this'. 'I will tell you I do not work

there and I am not interested in what they are doing'. So we had to create that identity. (MSBU).

A manager commented on corporeal interaction in the 'before and after' process.

I was involved with the pilot team when we did the pilot out at one of our mines. It was the first time that these multi-disciplinary teams were getting together and actually working through all the sustainability issues, including the PM. Previously what would happen is that the environmental people would go and do their valuation and all the risks and tell us what it is. You never got the benefit of the multi-disciplinary interaction. That works both ways. The other disciplines would alert the sustainability function to certain issues but also the sustainability function would alert the PM to issues that they should be taking consideration of. To me, that was the most powerful thing that came out of the SVA. (SMBU3).

Working separately obscures a holistic picture of E&SE dimensions during project development. A manager in S&SD noted: "strategically you are losing the bigger picture because you are splitting it into its components and one and one is not two when it comes to sustainability". Corporeal interaction allows individuals to share their expertise, and their different perspectives and concerns with each other, as they emerge during discussions. A project manager noted that corporeal interaction enabled E&SE integration:

As an engineer you would say we want to get the coal from there to there, and that straight line is going to be the best. If you have the environmentalist sitting next to you, they will look at that line at the same time and say, 'already I can see that that may be an issue, and that may be an issue, and let's get a team out there and do a few upfront studies and see what is actually there and maybe you want to do a conveyer belt like that'. Then you can avoid this without any cost or permitting implications and so on. That is the black and white difference. (PMBU1).

The after process brings cross-functional team members together in the same room to interact concerning E&SE dimensions. Different ideas and solutions are generated when the team work together. A manager in S&SD noted that new options were developed in a couple of projects that involved a cross-functional team, working together.

You make sure that you've got people that are represented from all disciplines [and] sometimes during a conversation, because what someone else has said, you think, but actually what if we do this? [or] we come up with a hybrid of some of the options that are there... or someone says, 'but actually what if we do it this way?'" Another project was "stuck" because it emitted significant noise pollution beyond the mine's boundaries and the technical experts seemed to have no solution. However, during an integrated workshop a noise specialist was able to offer a solution. The PM responsible for this project was surprised at the source of the solution and commented on the "added value" of an integrated team "because if you have this integrated team together, ideas are coming from [unexpected] directions, which are not taught to think in a certain way. (PMAA).

Corporeal interaction also enables the possibility of a more effective, and integrated response to challenges across different organisational domains. A manager in S&SD

commented on a project that involved water pipelines close to a community that needed water and sanitation.

If we put our heads together with those kind of people, we can extend the pipeline by a margin - like in the mining region where two million people now have access to water and they never did before because we have given them access to that pipeline - and work with government to do that kind of thing... A more effective response requires a more integrated approach and there is no denying it, you can't pretend that just because you work for the health function... that you can't work with the community guys. (MSD8).

Managing corporeal interaction can be difficult. A consultant to AA noted that corporeal interaction does not often happen due to the complexity of integrating technical, commercial and social-ecological dimensions:

We try and make sure that all those disciplines are integrated... this is a challenging process. The three aspects have to be one... On a project we identified 18 different disciplines. They are meant to interact and work together. Our 18 disciplines have really all come down to those three categories, technical, commercial and sustainability... They are meant to interact and work together but that often does not happen. (CAA2).

Corporeal interaction was found to be essential for E&SE integration and a formal process committed to integration, skilled and legitimate facilitation, and understanding the value and purpose of integration, enabled corporeal interaction in the after process. I report on the first two below, and the latter, later on in the chapter.

3.1.1. A formal process committed to E&SE integration

In the before process, E&SE integration was a familiar concept in the company and sustainability was formally part of the organisation's project development policies, however, members commented that integration was not happening. A manager in S&SD commented on E&SE integration in the before process.

Everybody knows that sustainability is important and everybody knows that you need to consult and everybody knows that your permits could impact on timelines but we had not explicitly made it part of the process. (SMD4).

The after process involved an intentional, structured process. A project manager commented on the benefits of formalising E&SE integration.

It has just formalised doing that work together... rather than hoping it is just going to happen along the way... it gives you a guideline or a process by which to integrate... Having that formalised process, everyone can see exactly what is required and I think that, in my mind, makes it [simpler]. In the old days we still needed to do all of this - but almost subconsciously. You knew you had to do it and you knew you had to integrate it. Each individual PM would do it his or her way and try and come up with the same solution in the end. It is more difficult... (PMBU1).

In a large organisation such as AA, integration is, in part, enabled by structure. It involves the formal inclusion of an integrated approach into extant business processes. A manager in S&SD commented on the need for such a process.

We need a multi-disciplinary team to understand the potential scenarios that can play out over the life of this project in a very structured fashion. It is not just a brainstorming exercise. [It involves working] through the risks and opportunities; the best case and the worst-case scenario, what is the context you will be operating in today versus what you will be operating in when you are approaching closure, do you understand the internal, external, local, national, regional... it is really mapping your context. (SMD4).

Integration needs to be intentionally enabled in a project planning process because the wide spectrum of interests, particularly the social-ecological dimensions, are not front-of-mind to many of the participants who are primarily concerned with economic dimensions. An employee in S&SD explained how structure enables integration:

The project-, engineering and planning guys don't think 'environment' because they should. It is because it is written into our processes. We have... mandatory project stage gates that assess economic feasibility, technical feasibility, what environmental licensing will be required... so it is fairly well entrenched and embedded because of those processes. (MSD6).

In the after process at AA, the formal process of integration is not a standalone process. Instead, it is integrated into the existing processes of the organisation. A dedicated integration unit enables integration and its function is "to ensure that sustainability is integrated into the business so it is pulled directly into the core business processes... it is about making sure that the requirements are embedded into your business principles" (M1).

A formal process that creates space and time for exploration is pertinent to E&SE integration. A sustainability coordinator commented that the space "is hugely important in getting to [an integrated solution] - the thinking space - a constructive, formalised [space] - does not have to be airy-fairy... It is a change management piece about making people think." Structure formalises the participation of all the different disciplinary perspectives; guides participants to think through issues that are not necessarily significant to their immediate priorities, and ensures incorporation of all the material E&SE dimensions in the integrated decision-making process.

Taken together, E&SE integration requires more than rhetoric about sustainability, strategy, and policies and standards. Instead, an intentional approach characterised by a formal, structured process enables E&SE integration. In addition, structure also provides a container for tensions that emerge during E&SE integration.

3.1.2. Skilled and legitimate facilitation

Research participants commented that E&SE integration is unlikely to happen if the team members are not guided through the process. In the before process, the project manager

seldom had a representative team together in the same room. Project managers were primarily engineers, focused on quantitative dimensions that they understood. An employee noted that, “when you start talking about all the other things [PMs] need to do, it is not necessarily their core competence. So [we] are trying to incorporate those core competences into project managers” (ER).

The successful integration of different perspectives in a project plan is dependent on the skills of the project manager. A manager commented that “it does actually rely quite heavily on the skill of that [project] manager and then the skill to bring the team across all those silos together to grapple with whatever is being raised rather than leaving stuff up to be managed in the individual silos” (SMBU3).

In the before process, the project manager was responsible to integrate E&SE dimensions, however, time pressures, personal biases, a tick-box approach focused on complying with standards and regulations, a focus on the short-term, sequential consideration of E&SE issues, and a lack of understanding of all E&SE issues all contributed to the project manager not adequately integrating E&SE dimensions.

In the after process, a skilled, and experienced facilitator guides the team and fosters understanding of different E&SE dimensions. Characteristics of a legitimate facilitator include basic knowledge about the different functions represented in the room, having no detectable bias towards either of the dimensions, and having an appropriate understanding of all the participating functions. Members comment that as soon as a bias towards a particular dimension is detected, team members resist the process. A manager explained this resistance:

You need to be very careful with choosing the right facilitator because if technical people see it as environmental people coming in to push their agenda, they push back with the perceived force that they feel they have been pushed. That is why it has to come from the PM who generally comes from a technical background, got a management perspective and can integrate everything. But in the case that you don't have the right PM, then I would say it is well worth spending a bit more on a better facilitator - somebody that can really understand the technical issues as well - not somebody who is an environmental expert for example that just rides rough shod over the miners. (MR).

Facilitator tasks include challenging assumptions and stereotypes that are typical to particular functions, managing egos and provoking meaningful discussion. In addition, the facilitator draws out different perspectives and helps participants understand each other. Table four consists of members' comments that explain the value and importance of skilled facilitation in the process of E&SE integration.

Table 4: Member comments about skilled and legitimate facilitation

<p>“I think what is good is if you have an external facilitator for a start. It removes a lot of the ego... You will always get individuals. It is a bunch of individuals rather than a bunch of different disciplines sitting in a room. So you could have a bunch of technocrats and you get a few awkward people or people who want to run the show or want to dominate and make sure that their voices are the loudest... It is good to have an external facilitator. The cost of it is really worth it. Then they know how to manage the different personalities. Listen to them and also listen to the quiet people and make sure that they pull the information out of them as well. That actually can pave the way to make it easy.” (PMBU1)</p>
<p>“If this process is not facilitated but is left to run by itself, it is never going to happen.” (PMAA)</p>
<p>“Sometimes not everybody around the table can link the issues together from each different discipline; context is lost, certain issues are not identified and then we end up with those manifesting themselves later on in the project. A facilitator’s role would include helping participants to engage, understand and make those significant connections between disciplines.” (MSD3)</p>

A partnership between a PM, who understands his/her inability to facilitate the integration process, and a skilled, legitimate facilitator, is essential to facilitate E&SE integration and to manage tensions between different individuals during corporeal interaction.

3.2. Temporality of interaction

Temporal dimensions of E&SE integration are a significant differentiator of the before and after process. Temporal dimensions of the integration process include sequential versus simultaneous consideration of E&SE dimensions and the timing of integration. In the before process, E&SE dimensions were considered sequentially and towards the end of the decision-making process. A manager in S&SD commented on the timing of integration in the before process.

Sustainability considerations (safety, health, communities, environment, social, license to operate...) were considered very, very seldom in concept phase and if considered it would be very late in pre-feasibility phase. Normally they would come to SHE (safely, health and environment) and say, ‘this is the mine design... please tell us what are the risks from a sustainability point of view’. (M4).

Late consideration of social-ecological dimensions in the before process resulted in costly consequences. Firstly, late inclusion of social-ecological dimensions and perspectives necessitate costly and timely re-engineering work on meticulously designed technical plans. A project manager recalled ‘how it used to be’ and explained the costly outcomes of failure to incorporate E&SE dimensions upfront.

What we tended to do... is focus on the technical issues first, and then plug the environmental issues in later. That often meant that you had to backtrack. So you do quite

a lot of expensive, timely project technical work; come to the end and bring the [S&SD] people in... and then they say, 'Oops - you are going to have to re-engineer this and that'... you just assumed that all those things will fall into place... that the environmental guys can just help us sort it out. (PMBU1).

A consultant to AA recalled a project option that was "technically fantastic... and commercially the best option by miles - but from a sustainability perspective it was questionable [due to] the process that people [used to follow], where they looked at the technical and then at the commercial and then they have kind of come to sustainability [who] said, 'guys, you are not going to be able to do this project because...' - that is really why we are trying to bring this decision-making upfront."

The second consequence of late consideration of social-ecological dimensions is the escalating cost of changing a project plan over time, as well as the complexity involved in late changes. The increasing cost of change becomes prohibitive at a point in time, resulting in decision-makers excluding the necessary changes to integrate social-ecological dimensions. A consultant to AA explained how the cost of change is related to upfront integration of E&SE dimensions.

We say that as time progresses your ability to change things on a project reduces because you make decisions and those decisions have an impact on other things and at some point you start investing real money. So typically in a project we start off and invest very little money upfront. But then when that project is approved we suddenly start investing a huge amount. At that point, once you start investing that money, your cost of change becomes very high. There is a high ability to change at a very low cost, upfront. As you go on, your ability to change decreases significantly and your cost increases. Then what you often end up doing is actually getting forced down a road of inefficiency. You get forced down this road that is going to be too costly where you now have to open up additional dialogue or your permit is being delayed. So there is a massive cost implication. (CAA2).

A research participant bemoaned the late inclusion of many of the sustainability issues because the increasing cost of change precludes integration, late in the project development process.

Issues need to be identified very early on in the project phase... You need to be starting to look at the issues we are going to face and how we are potentially going to solve those problems. What I have actually found... is that too many of these issues are being addressed quite late in the project stage and often it is too late to actually address it properly - particularly with something like water. (ER).

Project plans typically involve multiple aspects that require integration. Consequently, late changes are avoided because of the uncertainty of their effects on other parts of the project that have already been decided. A consultant to AA commented that he is "very, very reticent to late changes in a project. I think they are hugely destructive... even when you understand them really, really well because you never understand them fully" (CAA2). Consequently, incorporating all E&SE dimensions upfront avoids the propensity to

preclude social-ecological integration due to the prohibitive cost and escalating complexity of late changes.

A telling sign of late integration emerges when organisations experience financial constraints. A manager in S&SD suggested that late integration of social-ecological dimensions in the decision-making process resulted in them being “cut...when money is tight”. This suggests that social-ecological dimensions that were integrated upfront and incorporated during the design process are significantly more difficult to “cut” because they are integrated in the design-process.

If they are not integrated right upfront... then the minute money is tight, they will be cut. We are getting there for the new projects because integration is mandatory upfront. But we are yet to see in 10 year’s time, if money is tight in those projects, just how integrated they really are. We don’t really have any sort of foresight on that yet. (MSD6).

The after process necessitates upfront integration of E&SE dimensions. Cross-functional integration on the middle management level involves designing the detail of the project with E&SE dimensions in mind, from the outset. A manager in S&SD illustrated how upfront integration facilitated project design in a purchase-decision about movable assets.

It is really about thinking about it upfront. So you are going to buy 50 of these load haul dumpers. These things cost R500m each. Clearly you are going to look at price and performance when buying. But as part of what you look at... we now say check the emissions, the noise, and the safety, health and environmental factors that go into the purchase before you do it and not after, and then buy smart because that will give you a long-term effect. It does not help for me to come after the event and say to the manager, ‘that vehicle is too noisy and now you have to take it away, throw it out and get a new one’. You can't do it. It is way too expensive. You end up saying you should have thought about that a long time ago. You have to design right. You have to get it into the engineering design. You have to design around safety and ensuring health. You design around not harming the environment. (MAA1).

Upfront integration of E&SE dimensions in the after process provides a more holistic picture of E&SE dimensions that need to be considered in the design-process. Project options that do not include social-ecological dimensions at the outset may appear viable at first, however, when social-ecological dimensions are considered, they may become unsustainable. A manager in S&SD recalled a time when a project mine plan was changed because upfront participation of all the disciplines helped the team understand the consequences of their options from a broader perspective.

They chose an option where they actually cut out a section of the resource [that could have significantly increased revenue], because it went through a wetland and they understood that by going for that route, the longer term impacts like reputation and obtaining a license to operate, would have made it so difficult that they actually changed their mine plan. That was a big day because we realise that the organisation has come to a point where it is able to make different decisions because it has all the information on the table. (MSD3).

Taken together, E&SE dimensions need to be considered both simultaneously and upfront during the decision-making process to ensure that project plans are designed with E&SE dimensions in mind.

3.2.1. Upfront, simultaneous consideration of E&SE dimensions

The outcome of the E&SE integration process is a single, recommended option that is presented to the investment committee that is responsible for the final decision. In the before process, this option was selected early in the decision-making process, before all E&SE dimensions were understood, and the team tried to make the prematurely selected option work. A research participant explained how the process converged on a single option early in the process.

They go down a road and they choose a solution and they understand there is a whole lot of risks here but they have not really thought about all those risks and what potential impact they might have on the project. So we go down a path and we get a solution and we try and find mitigation for those risks... (ER).

In the after process, all E&SE dimensions, their potential risks, opportunities and impacts are considered before a choice is made. A manager in S&SD explained how the choice can be substantiated in the after process:

It just presents information in a different format so that when you go to the steering committee of the project, who is the ultimate decision-making body in every project, you say to the steering committee, 'This is how we got to what we think is the best option for the project; this is what we think could go wrong; this is the potential value we could lose if we chose an alternative option. As a result of all of that we recommend that this is the way forward'. (SBU1).

The study finds that E&SE dimensions need to be considered and understood upfront in the decision-making process, before converging on a single option.

3.3. Cognitive dimensions of E&SE interaction

The inductive analysis reveals that a lack of understanding of E&SE dimensions and their interrelationships constrains integrated decision-making. Table five identifies participant comments that illuminate the importance of understanding different E&SE dimensions.

Table 5: Understanding E&SE dimensions

<p>“You need to understand fully what is the impact of this decision... So if you say, ‘well guys, we have a risk of extra capital or extra operational cost, but the point is that we will be able to manage our workforce better’, that is fine. That is a play-off you can make because you can say this weighs more... Understand all the knock-on risks associated to that and if you do... at least you know the risk that is built into that so that you can capitalize for that and build it into your operations cost.” (ER)</p>
<p>“Hopefully we will continue to improve and get smarter - like with permitting - really understanding what are the key permits needed, how to go about getting them; not to overpromise to get your permit, to keep your promises to a reasonable and realistic level.” (MRA1)</p>
<p>“There is... a lack of people that understand both the legal and regulatory requirements... There are areas in the world that we need to develop and understand licensing and understand regulatory and legal requirements and then make sure that the right people are talking to communities in the right way.” (M4)</p>
<p>“We need a multi-disciplinary team around the table to understand the potential scenarios that can play out over the life of this project... - the best case and the worst case scenario. What is the context you will be operating in today versus what you will be operating in when you are approaching closure? Do you understand the internal, external, local, national, regional... it is really mapping your context.” (MSD4)</p>

The inductive analysis explored individual cognition and revealed that individuals have different perspectives towards sustainability. In the before process, tensions between E&SE dimensions emerged between different purposes and priorities associated with individual perspectives. These perspectives are more or less amenable to E&SE integration and include individuals who perceive integration as a hindrance to existing processes; individuals who acknowledge the need for E&SE integration but hold economic dimensions as their principal priority; and individuals who acknowledge the need for E&SE integration but prioritise social and/or environmental dimensions. These perspectives are explained in more detail here below and in appendix nine.

Resistance to E&SE integration. Resistance to E&SE integration is associated with reliance on methodologies that proved successful in the past and failure to acknowledge the need for change. The resistance is prevalent amongst employees who have a long employment history with the company. A manager in S&SD illuminated the history of this resistance to change:

If you have an old school guy who always did things a certain way, he will be very determined that that is the way it should be because that is what he knows. (SMBU1).

Resistance to change impedes the E&SE integration process and goes hand-in-hand with a compliance-approach to project development where PMs ensure that the requirements of

the project have been completed in order to fulfil the requirements, however, little or no thought is given to how these dimensions interact and impact on each other with respect to the overall project.

Economic primacy. Economic primacy incorporates two similar, but distinct types of perspectives, with identical outcomes in the decision-making process. The first perspective is a focus on economic dimensions in decision-making, primarily identified by attention to production output or financial performance. This economic lens disregards the importance of social and environmental dimensions in project decisions, consequently blinding decision-makers to the risks and impacts of social and environmental dimensions on projects. The second perspective prioritises economic dimensions but acknowledges social and environmental dimensions. Decision-makers are aware of these dimensions in decision-making but perceive them as non-‘core’ and less important when faced with a trade-off in a decision-making process. Their approach to social and environmental dimensions is largely compliance driven and the economic dimension take priority over social and environmental dimensions, which directs decisions towards economic considerations at the expense of integrating social and environmental dimensions.

Social-ecological primacy. Social and environmental primacy in decision-making is found amongst sustainability professionals who emphasise social and environmental dimensions and seek to understand and integrate all relevant social-ecological dimensions into decision-making processes. However, they often fail to understand the economic impact of integrating social-ecological dimensions. The comments in table six, below illustrate that social-ecological supremacy can fail to account for economic dimensions.

Table 6: Member comments regarding social-ecological primacy

“Sustainability practitioners need to understand that sometimes things are just not technically feasible. The trick is to get everyone to understand everyone else.” (CAA2)
“One of our projects in particular, we were looking at excluding a wetland area. The mining guys were saying that is fine but please understand that the coal in this area is of a particular quality. If you take that quality of coal out, we loose our blending capability and that in turn challenges meeting what the customer needs.” (SBU1)

A manager in S&SD explained the difficulty of having a balanced view and illuminates the nature of polarised perspectives in the decision-making process.

... I would struggle to get people to keep pushing to get production targets because I am so inherently aware of the [social and environmental dimensions]. Unconsciously I would be focusing on those and I would have to consciously focus on making sure that production

was being delivered. For a lot of our guys it is the other way around. They have been schooled and trained in terms of producing and managing cost. So they do that... (SBU1).

The before process was characterised by individuals with these different perspectives typically working in isolation, even though they were required to work together in the project planning process. Different individuals focused on either economic or social-ecological dimensions during the project development process. The after process, however, managed tensions between individuals, in particular between individuals who seek to dominate the decision-making process with the priorities of their perspectives. Managing these tensions on the individual level influenced integration at the group level by enabling participants to listen to each other and work through relevant E&SE dimensions, together.

3.3.1. Surfacing and managing tensions

The before process was characterised by the elimination of tensions between different perspectives and priorities. Tensions did not emerge because individuals with different perspectives relating to E&SE dimensions worked largely in isolation. These tensions included the tension between short- and longer-term focus in the decision-making process. A research participant acknowledged that the company struggles with this tension all the time and that the before process was characterised by a focus on the short-term.

Failure to surface tensions during the project development process has resulted in a lack of understanding about all the different dimensions that may impact on decisions. A manager bemoaned the tick-box approach to complex project decision-making where PMs' focused on complying with standards, rather than thinking about how different dimensions are interrelated. These standards, however, often provide little flexibility for balancing competing priorities. The manager suggested a different lens to manage the tensions in complex decision-making processes that seek to integrate competing E&SE dimensions:

The point I am making in an indirect way... Quite often it is not about defining the standard and ticking the block to say that this is what we need to comply with... I think there is a level of intelligence required to say: What are the repercussions; can we therefore mine if we have to binary comply with this? If the answer is no, then we can't mine there. It is not profitable to mine there because we can't comply... but be conscious about the decision that you are not going to have a mine. What is worse? Not have the jobs for 10000 - 12000 people? Or not having the safety standards that are not as high as we would like them to be. I don't know the right answer to that and I will tell you that 20 times over today. It is just that we need to be conscious that there is a different lens that is required and I am not always sure that we have the authority as management in the business to make those conscious fit-for-purpose decisions. I am not talking on behalf of the operations and the PMs'. I am an observer. (M6).

The manager's comments highlight the tension between the need for flexibility to embrace tensions and the inflexibility of standards that are designed to ensure that different aspects of sustainability are best in class compared to other companies in the industry. Enforcing standards upon decision-making processes without flexibility to surface and explore the tensions between competing demands, constrains integrated decision-making.

The after-process embraces different tensions that arise during the process of integrating E&SE dimensions and recognises that tension is both healthy and necessary as it signals the presence of diversity of opinion during the decision-making process. A manager commented on the importance of tension in the comment below.

I think there is this natural tension which may be a healthy thing when you realise after all of the discussion that maybe it is not unhealthy and maybe there needs to be the two poles and maybe they need to try and meet in the middle rather than just the one prevailing or the other prevailing. (M6).

A manager in S&SD commented on how the after process embraced the tension between different perspectives.

The tension is healthy. Ultimately everyone in the room wants the project to succeed and you often have to remind people of that. That is everyone's ultimate goal. And it is just saying if you look at it from this perspective, these are the issues and if you look at it from that perspective...[those are the issues]. But there is tension and you need it. (CAA4).

Tension is also credited as an enabler for creative solutions – especially where there are extreme perspectives involved in the integration process, as described by a manager in S&SD.

Often the more creative solutions come when there is an amount of tension... you need a healthy level of tension between the different disciplines... There is always going to be that tension. It is a good tension but it needs to be managed constructively and there needs to be the openness to accept that another person's views is as important as yours. (SBU1).

Examples of tension between competing, interrelated priorities include the tension between economic development and social-ecological protection in the region where a mining project is planned. This tension often centres on affordability, which is affected by expected future income. Income is influenced by a globally regulated commodity price. Fluctuation of currency plays a significant role in the company's ability to deliver on both developmental and protection expectations because future price is framed by significant uncertainty. Despite complex financial modelling, projections are rarely accurate. A manager explained how the tension played out in an example of a mining project that was being considered for investment.

There is a tension between what the local community wants to see us protect, - quite rightly so in respect of water and access to water - and what they want to see in terms of investment in the community so that they can get a direct reward from the amount of

investment that is going to be undertaken in the project. Sometimes those demands for infrastructure investment or other benefits to the community can make a project unattractive... We have no control over the price we sell. We can only control the cost. So the margin is particularly key. If we are making promises to a community that push the costs up where the margin is too thin, we will not make the necessary return given the risk that has been taken to develop that project and therefore the decision might be that we can't make that investment. The promises that we make where we have confidence in high prices - perhaps we cannot deliver those and make the same returns to shareholders in a period where commodity prices come down because the demands from the community have not come down in relation to what we are planning to do. Therefore, a tough decision has to be made as to whether we can afford that investment. It is something that we have to grapple with and reflect exactly what has happened in the last couple of years as commodity prices fall from the highs we saw in 2010. (M4).

Another example of the tension between E&SE dimensions demonstrates different tensions are interrelated, including tensions between employee and company interests, and short- and longer-term interests in decision-making processes. An employee in AA recounted a mine extension plan for a project that was reaching closure. The project team wanted quick approval to safeguard the jobs of 1500 workers. In order to ensure that the project is approved before mine closure, the project team designed a project with the lowest upfront capital investment. However, according to the employee, they did not allocate sufficient resources to ensure safety in the mine. He illuminates the complexity of the interrelationship between E&SE dimensions and bemoans the short-term focus in the project team's thinking and explores the consequences.

The way that they [the project team] have now viewed this, in order to get through all the stage gate reviews, they need to reduce the capital as much as they possibly can so that it is more easily approved by the board. So that was the main driver... Many safety issues are being overlooked... because they want this project approved, because they want people to keep their jobs. So they have made certain decisions on this project, based on this, which is not the best way to run this project on the long run. There is a lot of uncertainty built into this and a lot of risk built into the decisions they have taken because in their view - if you look at it from a project point of view - what is the production of a project? It is performance on schedule and cost - that is the production - so production in this sense is considered more important than safety. It is a difficult play-off to make. As a manager of the corporation, on the one end they have 1500 people potentially losing their jobs, or, if the project is being delayed by 6 or 12 months, they need to somehow lay these people off and then somehow re-hire them or something. It is a big impact. On the other hand there is the safety consideration. In practice what has happened, although we know that safety is a primary consideration for us as AA as a group - practically, safety has now suffered - and that is not the only issue. There are long-term concerns that are being compromised for the short term. So it is better to have less capital, but then to operate this mine will cost us 25% more over 20 year - of which the total cost will be a lot more - two or three times the capital that you spent in the first place - which you are now spending extra over 20 years because you chose to make a decision based on a short term incentive. It is a very real situation in AA at the moment and I think in a lot of instances there is very little guidance on this which forces management in certain roles to make these hard decisions - without having proper guidance for doing that. And then they need to bear the brunt for whatever the decision is that they make. (ESD3).

In South Africa the tension between E&SE dimensions also emerges because of the unique, contextual reality of high unemployment that influences integration. A manager in AA explained the tension between employment and safety interests in this context:

There is another issue, which is a really fascinating and challenging aspect to life in the mining industry in South Africa. If there is any move to introduce new M4logy - it is treated with complete suspicion because it is seen as job elimination. To give you a very broad view, the whole thing about injury and risk is exposure. So the more people are exposed to injury and risk, the more people are going to be hurt. It is as simple as that. You know [one of our BU's] takes more people underground than the entire Australian mining industry. They take them underground every day. And underground [mining] is probably five times more dangerous than surface mining. So obviously all the numbers stack up and on that basis our numbers are not in sync with Australia. The absolute numbers just don't look relative. So it is all about risk. It is all about bringing in new M4logy. The challenge, as in any industry, is that you need to get your productivity up. Productivity has been declining in this country and the cost of labour has been rising. And then there is this moral imperative to make it a safer working environment. Now M4logy is one of your strongest levers to play. There is a distinct resistance to embracing and supporting new M4logy underground, particularly because they just see job threats... So you want to bring safer equipment... but the flip side of that is less employees. That is a reasonably well-understood phenomenon. (M9).

In the after process, tensions between competing individual perspectives in decision-making processes are identified and managed such that different perspectives can be explored simultaneously. A research participant noted "it is not 100% perfect but the big difference is the conversations that are happening around the boardroom and in the project design processes that were not happening three years ago."

The facilitated process is structured in such a way so as to be a container for tensions that emerge during the decision-making process, when different perspectives emerge in opposition. A facilitator surfaces and manages the tension between individuals with different perspectives. Table seven, below, illuminates the facilitator's role to be a 'devil's advocate', draw out different perspectives, facilitate discussion, make assumptions explicit and challenge decisions.

Table 7: The facilitator's role in surfacing and managing tensions

<p>“One of the key roles is a facilitator with a very specific skill set to take the team through this process. The facilitator is a devil's advocate - constantly questioning - like a Socrates method - making sure people think... we have so many blue people in mining that like to blue print and do things the same way they did it before... because it worked the last time. But in our context that we are working in today, that is just not effective anymore.” (MSD4)</p>
<p>“But if you have an experienced facilitator who can drag out ideas out of people and put them on the table and then discussion and matching can happen, it is much easier.” (PMBU1)</p>
<p>The facilitator "gets to call on all the stereotypes of all the disciplines and really just challenge the way people are looking at a project." (SBU1)</p>
<p>“Facilitators need to be challenging us. From the specialist studies [they] need to be challenging the way that we are looking at this project and saying, ‘Actually that project is not good enough. That impact is not going to be accepted by society or the regulator.’ And so when you get these disciplines in the room they are having that conversation with each other.” (SBU1)</p>

During the after process team members are encouraged to share different opinions despite potential opposition between them because “all of that tension is supposed to play itself out in the pre-feasibility option selection... By the time it goes to the investment committee to take it from pre-feasibility to feasibility stage, all of those battles should have been fought.” A manager in S&SD, who has fulfilled the function of facilitator on a number of projects, recalled the increase in tension in the before and after process as a result of facilitation.

When I started here and I was here about three months, the project manager said to me... ‘Since you started here, I have suddenly got all these headaches’. I said to him, ‘you have not suddenly got all these. The headaches have always been there. You just have someone now who is drawing you attention to them. That is the biggest change we are seeing on our projects... because [the project manager] has a person constantly hitting him on the head. (SBU1).

Findings from this case emphasise the critical, and enabling role of a facilitator in surfacing and managing the tension between competing purposes and E&SE priorities associated with different perspectives. These differences are intentionally explored, instead of avoided. The facilitator skilfully draws out the different perspectives, challenges stereotypes, and manages individual egos to enable individuals to explore hidden, and taken for granted assumptions.

3.4. Dimensions of precedence

Understanding different E&SE dimensions, their underlying assumptions and their impacts, is essential in the process of E&SE integration. Understanding requires additional time investment upfront in the decision-making process. The before process is

characterised by project managers who were under significant pressure to deliver the ‘fastest and cheapest’ project. Table eight here below illustrates this point with two participant comments.

Table 8: Participant comments about priorities in the project development process

“A PM is given a mandate and often he or she would find it quite difficult to incorporate all this other stuff in terms of the mandate that they have been given... they may not really understand the consequences of those decisions. [They] want to have the cheapest project because they have KPI's to meet and they have growth targets and they want things done fastest and cheapest... and maybe not necessarily fully understanding the risk. We have all these wonderful risk tables but no-one really takes those risk tables and say... are we quantifying this correctly?” (MR)

“They would choose to understand only the technical issues and the commercial issues - but not stakeholder issues. That is not the case across AA but certainly in some parts of the organisation it is. I think as time moves on that level of person would be required to have more knowledge of all environmental, social and permitting issues simply because they are critical to the success of the project.” (MR)

The priority to produce the fastest, cheapest project has significant implications on E&SE integration. These include a lack of understanding of E&SE dimensions, elimination of dimensions that do not align with economic priorities and premature convergence on a single option. A research participant commented: “Often PMs are chasing the lowest capital cost. So we often don't necessarily go and explore.” The priority to converge all E&SE dimensions into a single option precluded exploration of alternative options. The development of alternative options requires time to understand different dimensions and their impacts on the project. Consequently, those social-ecological dimensions that were not understood – primarily those dimensions with longer-term impacts - were often prematurely discarded. A sustainability coordinator comments on the short-term focus of project teams.

Project teams are focused on getting their projects up and running so it is very short term focused and ultimately even BU's and decision-makers struggle to look past a five-year horizon. And a lot of our issues are long term with changing regulations and legacy issues and water pollution, which may only happen if you are 10 years into your mine. So for me the biggest stumbling block is getting people over the mind-set of short-term focus. (ESD2).

A manager commented on how the short-term focus on economic priorities precluded the exploration of alternatives and prematurely converged the decision-making process on a single option.

Sometimes it is quite hard - a lot of people and PMs don't understand... often we are so focused on looking at a financial outcome instead of weighing off the risk against the financial outcome. We have not been particularly good in the past... [understanding] the risk of a specific financial outcome versus the financial outcome of a different alternative and the risk that goes with that alternative. (MR).

3.4.1. Developing alternatives

The outcome of economic dominance on the before process was premature convergence on a single option that was not fully understood. By contrast, the after process involves the team developing alternative options based on “what if?”- scenarios of what might occur over the 'life of mine'. Scenario-development involved combining E&SE dimensions into different project options. An employee in AA explained a typical example of scenario development.

Haul trucks are currently one of the highest risks that we have got in the group in terms of safety. There is a large uncertainty built into that because who knows what the fuel price is going to be in 20 years... [The alternative is a conveyor belt, which] is a US\$100m on a US\$500m project, so it is a big portion of money required upfront. But over a 20-year period, that decision may prevent, for arguments sake, three fatalities, and it may reduce your operating cost between year 15 and 20 by 100%. So some of it has a direct impact on operating cost. Some have a less tangible impact on cost. (ESD3).

The process of developing alternative options enables the integration of E&SE dimensions that have impacts over the short-term and those that have an impact over the long-term, into different project options that can be compared. Developing alternatives also facilitates exploration of risks and opportunities associated with different project options, and facilitates potential innovative solutions for anticipated future challenges such as resource scarcity at a future point in time.

The study finds that temporal suspension of the dominant economic priority to quickly converge on a single option enables the development of alternatives.

3.4.2. Suspending premature convergence

Suspending premature convergence during the process of E&SE integration creates the time and space for members of the project development process to understand different dimensions and integrate them into different options. Suspending premature convergence involves precluding team members from prematurely judging E&SE information or discarding options. The risk associated with selecting a single option too early in the integrated decision-making process is primarily associated with stifling exploration early in the process as well as inhibiting understanding of E&SE dimensions and their interrelationships, which impacts negatively on the project over time. A research participant noted that a lack of understanding led to pre-mature option selection.

Designers and decision-makers often do not understand the risks and have not thought through their potential impact on that particular solution. Often you get people who don't really understand... They go down a road and they choose a solution and they understand there is a whole lot of risks here but they have not really thought about all those risks and what potential impact they might have on the project. So we go down a path and we get a solution and we try and find mitigation for those risks but often we don't necessarily look at what is the alternative and would the alternative be better... (ER).

A research participant recalled an example in the before process where alternative options were not considered for the water source of a particular mine.

We did have a solution on the table and it was not necessarily a bad solution. But it did require quite a lot of involvement with the community... Now if the project team had actually been allowed to look at the alternative of desalination and pumping... it probably would have been a better solution, but at the time everyone thought that they would manage the solution and they would manage the community. It took two years to get to a potential outcome with the communities. In that time we could have built the project and the desalination plant... We knew it was a risk but we did not articulate it particularly well [and] we did not know the level of the risk and the alternative seemed too expensive. (ER).

In the after process, while the cross-functional team is guided through a process of working through the different E&SE dimensions and considering their cross-functional impacts, the facilitator prevents premature elimination of information and options. During an SVA training workshop, participants worked through an example case in an integration workshop. I observed how the facilitator precluded a team member from prematurely judging an option. When team members judged options or information that other members raised, before all the dimensions had been understood, the facilitator precluded their elimination because options that may not appear viable at first may be viable when all the E&SE dimensions had been considered and understood. Therefore these options remained on the table. The practice of suspending premature convergence created the time and the space for workshop participants to think more broadly about different options, discuss them, ask questions and understand key considerations with respect to those options.

The study finds that suspending premature convergence creates space and time for exploration and understanding of all E&SE dimensions, before binding choices are made.

3.4.3. Developing a common valuation language

The E&SE integration process is designed to develop different options. Options development involves developing comparable, integrated options based on scenarios of what might occur over the 'life of mine'. Options do not provide an answer for decision-makers but they do offer alternatives based on a more rigorous process of preparation and understanding of different dimensions that may or may not affect the project. Options provide alternatives with different cost, time, risk and other differentiated aspects. During the process of developing different options, team members consider the mine's impact on E&SE dimensions as well as the impact of broader E&SE dimensions, on the mine while they develop different scenarios that are reflected in different options. In order to ensure that the team remains committed, the options development process is consensus-driven.

The ability to compare different options in meaningful ways is pertinent to enable informed choices during the process of E&SE integration. The valuation of different options facilitates comparison by identifying the cost and rewards of different integrated scenarios, and comparing them in order to propose a single best option for a project. Comparison requires a common ‘language’ that facilitates understanding and communication across different aspects of sustainability. However, the comparison process is constrained by tension between different ‘languages’. A manager in S&SD commented that the before process was characterised by different languages.

Engineers have their own language and sustainability people have their own language and we had to find a common language that everybody understands. (SMD4).

In the before process, valuation relied heavily on a financial ‘language’ – the Net Present Value (NPV) valuation model. NPV is the industry standard for valuing projects. Members highlight the challenges of the current valuation model in table nine, below.

Table 9: Challenges with NPV valuation model

<p>“The financial models drive the whole decision-making exercise. Rightly or wrongly in my opinion there is an over-emphasis and reliance on the numbers and it is an invented number anyway in the case of NPV.” (SMD4)</p>
<p>“The project with the highest NPV may not be the best one from a sustainability point of view.” (MSD6)</p>
<p>“In the past, everybody thought [NPV] is an easy topic. Everybody thought it is about calculating the NPV and picking the highest one... It was wrong. And it continues to be wrong. Wherever people do it and we still see nodes where people do it because they do not understand it. Should we not understand what the likely outcome should be of the upside and downside risk in 50 years time?” (M7)</p>
<p>“Excel has made it very accessible to people who do not understand what it is. As a result it drives decisions quite often that are very, very wrong without people knowing that they are making the wrong decision. But they are all defending it on one number.” (M7)</p>
<p>“Any business decisions that are going to impact on NPV early on in the life of the mine is going to be flagged pretty quickly. But particularly environmental and social issues are going to manifest over years and decades... and for example subsidence related to underground mining... you are only going to see that in 100 year’s time...but you have to make the decisions now... do you mine that area and how do you mine that? An NPV model just does not have that flexibility. So any decisions that helps us get our permits, that can be demonstrated in the SVA model, that is the decision we must make.” (SMBU1)</p>

The use of NPV as a valuation tool has two significant shortcomings. Firstly, it reduces all E&SE aspects into a financial value. It is, however, not possible to reduce all social-ecological dimensions to numbers, for example, the potential loss of life due to unsafe practices is a social-ecological dimension that cannot be quantified. Secondly, it minimises the importance of material social-ecological issues in the distant future. Consequently,

overemphasis on NPV leads to the elimination of material future social-ecological issues that cannot be valued. This was illustrated by a particular project where the project manager did not want to include R100m for potential water seepage in a project because including the amount for the uncertain, future event in a spread sheet at year 40 in the NPV-model, had no real effect on NPV today. A manager acknowledged the shortcomings of using NPV in isolation.

All of the theory and complexity [of calculating the NPV] is theoretically very sound. But when you get the number you realise it is flawed and that you cannot make a decision based on the number... (M7).

Despite its significant shortcomings, the after process also uses NPV as a valuation tool to facilitate comparison of different options. During an interview with two members of the integration team (one former member and one current member), they commented that decision-makers found “fluffy stuff” difficult, however, when they started talking about *value*, people took notice and listened. Consequently, they standardised their subject-specific ‘language’ and learnt to speak the language that their colleagues spoke during decision-making. This enabled them to “hold their own” and argue convincingly on financial matters and thereby, remain part of the conversation and on the agenda.

As a result, the integration team decided that the best available valuation approach for the after process was NPV, firstly because the need for E&SE integration is more easily demonstrated to individuals with a predominant economic perspective by using an existing common language that they understand. Secondly, there is not yet a common valuation tool that is widely accepted and trusted within the industry and within the field of sustainability. A manager in S&SD explained how a common valuation language enabled understanding, integration and comparison.

We had people who sat around the table speaking different languages. Engineers have their own language and sustainability people have their own language and we had to find a common language that everybody understands. Because there is a big reliance on NPV, we used that as the proxy language and for that reason we looked at how do you value the sustainability key value drivers financially - but link with that a non financial component. There are four areas you can value: CAPEX (capital expenditure), OPEX (operational expenditure), revenue and reputation. We tried to take everything in the sustainability side and work it back into that language. Instead of developing a new language, we used financial language. Because it was not financially articulated, people did not realise that by spending a bit more CAPEX now, you are reducing your risk - even if it is unknown - you will at least know that you will be able to deal with that risk in the future because it is possible to weigh the various options up against [each other]... Then you can ask yourself, ‘what is the chances of a delay when we go down this specific route?’ We have seen years of delays on projects. You just start putting a reality check on what these options do to one another. (SMD4).

Despite its shortcoming, valuation by means of quantifying social-ecological issues and measuring them alongside other dimensions in the NPV model has added rigor to the decision-making process and facilitated understanding of social-ecological dimensions in a process that formerly excluded social-ecological dimensions because they were not understood and were not measurable. A research participant explained the valuation process.

The SVA process came in to try and find a way of quantifying the risk - what happened is that we often had it as a qualitative risk - but never really quantified it; or sufficiently quantify the impacts and then do a comparison between one alternative and another. One alternative might look ok - but actually we have a whole lot of risks here but we have not really incorporated that into our thinking and if you really had to look at it on a risk weighted basis then this alternative may not necessarily be the most attractive alternative because economically the consequences of all those risks probably outweigh the actual financial outcome... we are trying to do that by taking some kind of quantitative measure from our risk ranking and trying to put them into a quantitative way into our projects so that we do try and look at it. (ER).

The outcome of comparing different integrated options has led to increased understanding of social-ecological impacts. A manager in S&SD commented on the reaction of organisational members after applying the valuation technique.

“They could not believe that by factoring in sustainability not as a risk that sits somewhere separately on a risk profile... we turned those risks into numbers and it made people sit up and take notice. What we were very clear on is that you don't always choose the most conservative NPV, but you need to know what you are letting yourself for (SMD4)”.

Managers in S&SD and finance agree that NPV is a helpful language, however, it leads to wrong decisions when used in isolation. Below are comments from two managers that illustrate the risks of overemphasizing NPV:

NPV ... should only be one of the inputs in the decision-making process - not the indicator. (SMD4).

It is very useful to make [NPV calculations] but it is one lens between 10, 20 or 30 other lenses that you need to have on a project. If you focus only on the NPV it is very likely that you will make the wrong decisions. (M7).

Although valuation and measurement of social-ecological dimensions is an imperfect and difficult practice, it has led to different choices and fundamental changes in project plans. An employee in S&SD recalled a project with a different outcome as a result of valuation and comparison.

...Then we value those and put a cost to those [options]. You now suddenly need to build a desalination plant because there is no [sustainable access to] water... It is just a more rigorous look at your options analysis to take into account sustainability issues and then value those - which is the hard part. (ESD2).

This section illuminated the importance of a common language to enable communication and understanding between different members of the cross-functional decision-making process. A common language also allows comparison of options.

3.5. Identity dimensions

From the inductive analysis it was evident that the before process was characterised by a lack of understanding about the purpose of integration. An employee in S&SD likened AA to a person and commented on the relationship between purpose and identity. “If your purpose is pure profit, then you will do things differently, you know. But I think before you determine what your purpose is, you need to know your identity - it is like you need to know yourself as a person before you decide how you do things and what you do because it informs the decisions you make... how you do things.” The inductive analysis included an analysis of the organisation’s identity in order to gain a better understanding of member’s understanding of the purpose of integration in the before and after process.

The identity analysis reveals that members are not unified in their understanding of AA’s identity. The data analysis of AA’s identity is tabled in Appendices 10-14. Some members noted that the organisation’s identity is fragmented and others found it hard to “pin down a company identity” (MRA2). Data from participant comments, examples and narratives, provided insight into participants’ understanding of AA’s identity at the time of the research.

The identity label “responsible” emerged as AA’s core identity attribute as it relates to sustainability. Members referred to safety and sustainability (social and environmental dimensions) as nested attributes of AA’s sense of responsibility. The identity label ‘responsible’ was used across the organisation - in isolation and in conjunction with either economic dimensions, or social-ecological dimensions, or both. A manager in AA commented on AA’s *responsible* identity, below.

I definitely do [think AA is responsible]. In thinking about the operations that I have seen around the world, you have structurally all the elements: The leadership speak and talk it - it is everything from our top CEO to what happens on the ground. It is visible. The people are locked into it. (SMD7).

Historically, being responsible entailed being technically excellent, and generating wealth for the primary purpose of returns to shareholders as well as a secondary purpose of contributing positively to communities. The founder’s purpose statement, penned in the early 1950’s confirms this understanding: “the aim of this group is, and will remain, to make profits for our shareholders, but to do so in such a way as to make a real and lasting contribution to the communities in which we operate.” Significant societal and environmental changes contributed to ambiguity in the organisation’s *responsible* identity.

Narratives about change in the organisation tell the story of continuous, but slow change over the century-old life of the organisation. AA's identity story reveals that the meaning and labels associated with this identity have changed significantly. The meaning of *responsible* has increasingly incorporated attributes of corporate sustainability. A manager in AA noted that members were starting to 'own' a 'sustainable' identity, resulting in sustainable actions.

As the sustainability function has matured, it has seen itself as being absolutely core to the business process itself. Once we saw ourselves as being that, we started acting in that way and all of a sudden you were not making a business case, you were making a value case or a risk avoidance case - one or the other... (M1).

The emergence of sustainability has been instrumental in identity change. According to a manager in AA, sustainability compels change because it is able to work across management disciplines that otherwise work in silos. However, this process is not easy because of organisational structures, culture and ways of working that resist the integration of E&SE dimensions in sustainability. The manager commented on the resistance of some of AA's members to this culture change.

The company was set up in a massive silo organisation... and I would say [the sustainability department] started operating in a matrix way where we would say, 'well if this is a good way to do something in safety, we must do it across the business' - that was a big culture shock for people... [who would say] I do not work there (in the sustainability department) and I am not interested in what they are doing. So we had to create that identity. (MSBU).

Despite significant changes in recent years, a member noted that the company struggled with balancing different dimensions and tended to oscillate attention between financial and non-financial dimensions, depending on the crises at hand.

I think there is a bigger focus on sustainability. I think it is definitely playing a bigger role in the decisions that people make... S&SD is the conscience of the business so I do think it gets a stronger focus but I think sometimes people take it out of proportion. There should be a balance between production, sustainability, and people-management... One should not be seen as more important than the other. When things are going smooth then everything is fine. When there is chaos... people push production and they will forget about sustainability. All of a sudden we have an accident then all of a sudden safety is the focus. I think we struggle to keep that balance. We will have ups and downs but I think our ups and downs are quite extreme... but I think it is better than what it was 10 years ago... There are good things that are happening. People are making the right noises. (ESD).

An integrated way of doing things is suggested as the true measure of sustainability. A manager noted that AA is "not there yet". He believes the company needs new structures, processes, parameters and measurements to facilitate the transition to an integrated way of doing things.

I can proudly say that we have made huge in-roads in the last couple of years... I suppose the ultimate test will not just lie in the numbers but will lie in the organisational culture and the values and... *do we have this kind of integrated way of doing things?...* Now we are not there yet - that is where we want to be - therefore we need structure and process and

parameters and measurement and all those kind of things to help us along this journey. But we still believe that is where we will end up.... where it will just become a way of doing things. (MSBU).

The theme *responsibility ambiguity* was inducted from the data. *Responsibility ambiguity* depicts the overarching question from research participants: *What are we responsible for?* The ambiguity stems from members not understanding what they are responsible for when making decisions that have social-ecological impacts. *Who are they and what should they be integrating?* A number of issues illuminate this ambiguity, including ambiguity with respect to what the corporate is responsible for and what government is responsible for, gaps in legal frameworks and a lack of clarity on the company's purpose for interacting with, and investing in communities surrounding their operations. The company works together with government in the areas where it operates to ensure a sustainable future for local communities. Members comment that there was greater clarity about roles and responsibilities in the past when the mine took care of business and government took responsibility for basic services to the community in order to ensure long-term sustainability. An employee in S&SD explained this perspective.

We are a business. We have to make money. A lot of the socio-economic things that we do for the community - buildings, schools, fixing roads - that is not our job... Our job is that we don't [damage] the environment that the community relies on. We make sure that their water sources remain unpolluted, that they still have access to fertile land, that we rehabilitate to a sufficient standard; that they can still feed their families; that they have got jobs to come to and that if we do embark on creating jobs and entrepreneurship, that it is sustainable so that when that mine leaves, that community is [sustained]... because all those jobs are dependent on a mine. There are certain things in the socio-economic area that should be dealt with by the government - that is their charge. And there are certain things that we can do that should not create dependence. (SES).

The company has increasingly taken on responsibility for community expectations that formerly rested with government. This situation is not unique to AA but it has been the source of much ambiguity within AA. A consultant to AA illuminates this challenge.

In many ways, South Africa's legislation is forcing companies to take on what would traditionally be government's role... It has complicated what is happening on the ground... There definitely needs to be a real challenge around who takes responsibility for what. (CAA4).

A lack of common purpose with regards to the company's responsibility vis-à-vis local communities surrounding mining operations, amplifies identity ambiguity. Some members believe that the organisation's sole responsibility is to prevent harm; others believe AA should make a positive difference, and still others bemoan unsustainable dependencies that are created when the company steps in to provide services that would otherwise be provided by government. A manager in AA believes that the ambiguity stems from a lack of common understanding of the purpose of project development with regards to corporate sustainability.

It is difficult to design a project that is “fit-for-purpose” if you don’t know what the purpose is. So, it starts before the decision-making. It starts at philosophical level. We have often made these decisions and I am not sure that we always think through all of the repercussions of the decisions at a philosophical level - and I don’t know whether anybody in the sustainability world has ever defined levels of sustainability. So how robust or how sustainable do you want to be as a group? And is there a trade-off? So sustainability in the social context, on the one extreme, could be that you provide for communities and people over and above your shareholders and over and above management forever and a day. And that would be an extreme in my case. It is not sustainable long term for shareholders. The philosophy that needs to be defined is about a relative level of standards of practices compared to what is generally accepted. To me that philosophical discussion is important to start out with. The reason is that if we as a mining company do things in a way that is much more robust from a pure social and environmental perspective than what countries are expecting; what communities are expecting... If we bullet proof our projects and operations to such an extent, we won't make profit. If we benchmark ourselves with our peers, the question philosophically is, where do we sit? And is it truly a differentiator to be on the end of the sustainability curve where I think Anglo is - whereby our vision... is that host governments would call on AA to say, ‘why don't you come and develop this resource body because you do so in a much more sustainable way than any of your peers’. Well, great. We have just recently given up more than two of these options because after studying it for a long time and spending a lot of money - and money in the community, we realised that we will never make money off those resources. Now is that sustainable? I don't think so. Now the reality is, where do you want to be? (M5).

The fit-for-purpose discussion points to ambiguity in the organisation’s identity around *who we are as an organisation* and *why we do what we do*, in other words *what we take responsibility for*, compared to other companies in the industry. An example that research participants often cited to point to the company’s leadership position in the mining industry concerns the provision of anti-retroviral drugs for HIV positive employees. The juxtaposition of two different accounts in table 10 reveals both the tension between E&SE dimensions and how identity guided decisions in the midst of uncertainty. The two accounts of a decision-making process on the senior management level, illustrates that E&SE dimensions were integrated despite significant cost and uncertainty, because a senior leader reminded the decision-making team of the identity of the organisation: it was “about money... but it was about much more too” (M1). The team were reminded that the economic and social dimensions were interrelated, and that the organisation’s identity involved responsibility for both.

Table 10: Two accounts of leadership in the industry

Account 1	Account 2
<p>“There was a time when HIV [Human Immunodeficiency Virus] first started, the business response was, ‘well, government must fix this. This is a national problem for society as a whole - and government, fix it, sort it out. We are mining’. And then the HIV in our workforce grew and grew and eventually it got to 25% of the workforce that were infected with HIV and we were kind of looking to government: <i>what are you doing about it?</i> But now the investors were saying, ‘well, if you have a sick workforce, is that such a good investment for us? We could invest elsewhere. So we kind of came home and very definitely we got engaged in ensuring the health and wellbeing of our workforce that would start to compromise our business. That is especially in the context of AIDS [Acquired Immunodeficiency Syndrome] - where treatment was available but largely unaffordable and government was in a state of denial about the treatment and we had to take a huge leap of faith. Did the management of this business at the time have all the evidence that they needed to decide on? Should we invest in treating people for HIV or not? They basically did not have all the information and it became a moral decision for doing what was right; knowing the economic benefit of that; as a business having the guts to make that decisions and just get on with it and maybe rising the ire of our investors: ‘what are you investing all that money in that for?’ We did not know at the time... we did not know exactly what it was going to cost or whether it was going to work, but we knew if we did not do something our business was not sustainable. And so we did it and we came out as this big conservative Anglo American and said that we were going to provide treatment for AIDS for our workforce. I now have the luxury of looking back after 10 years and saying it was one of the best business decisions we ever made.” (MAA1)</p>	<p>“In 2001, when we decided to provide HIV drugs without knowing all the numbers, we had this massive debate and I was in that debate. All the counter arguments were being made and we were just seeing the epidemic and we were seeing the numbers being potentially massive. ARV's [Anti-Retroviral Treatment] were quite expensive at the time and we did not foresee the reduction in cost - so it looked like one hell of a problem. And at the end of it, [the CEO] cut right through it and to his eternal credit he said, ‘Do we look after our employees?’ We said ‘yes’. He said, ‘That is one of our values...’ and our employees are ill and they are not getting the stuff from our government, is that right?’ And they said, ‘Ja’. And he said, ‘what are we talking about? Do it.’ Now those are the times when the values, I believe, kick in... The decision was about money... but it was about much more too. When Anglo first started talking about providing anti-AIDS drugs, a year's medicine cost twice the annual salary of a miner.” (M1)</p>

On the middle management, in the cross-functional team of the project development plan, members identified with different aspects of the organisation’s ‘responsible’ identity. Many members focused on either economic or social-ecological dimensions of the organisation’s *responsible identity*. In the before process, different functional areas developed expertise in isolation and decision-making processes involved some level of integration amongst different economic dimensions and amongst social-ecological dimensions, however, they seldom integrated E&SE dimensions. In the before process, project managers, who were primarily engineers, identified with the economic dimensions of *responsible*, considered E&SE dimensions separately, and in sequence, rather than simultaneously, and economic dimensions were considered first, thereby enjoying priority. This resulted in premature elimination of social-ecological information and options from project plans that were meticulously designed from a technical and engineering perspective. However, failure to recognise the interrelationships between

E&SE dimensions in the design of the mine plan, resulted in social-ecological harm and financial losses. As a result, outcomes of organisational action resulted in neither of these dimensions being recognised as *responsible*.

Figure three depicts the interrelationship between E&SE dimensions associated with the organisation’s fragmented *responsible* identity. Figure three illuminates how project development plans that fail to integrate E&SE dimensions result in bi-directional impact on E&SE dimensions to the degree that neither the economic nor the social-ecological aspects of the organisation’s identity are recognised as responsible. Social-ecological responsibility is eroded through employee fatalities, health conditions, environmental damage and unmet community expectations, amongst others. Failure to integrate E&SE dimensions had a direct impact on technical and engineering outcomes by reducing production outputs due to mine closures or stoppages. Reduced production outputs had direct financial implications and indirect financial implications associated with the costs of addressing harm associated with social-ecological dimensions. Although E&SE functions were deemed *responsible* in isolation, the impact of organisational decisions on economic and social-ecological dimensions resulted in *responsibility ambiguity*.

Figure three, below, provides insight into why an investigation by the company into significant project failures at AA, concluded that project delays and losses were primarily due to social-ecological dimensions, despite significant and growing resource allocation and investment in each dimension respectively. The realisation of the interrelationship between E&SE dimensions contributed to the decision to intentionally integrate E&SE dimensions in key organisational processes.

Figure 3: The interrelationship of E&SE dimensions with respect to AA’s responsible identity

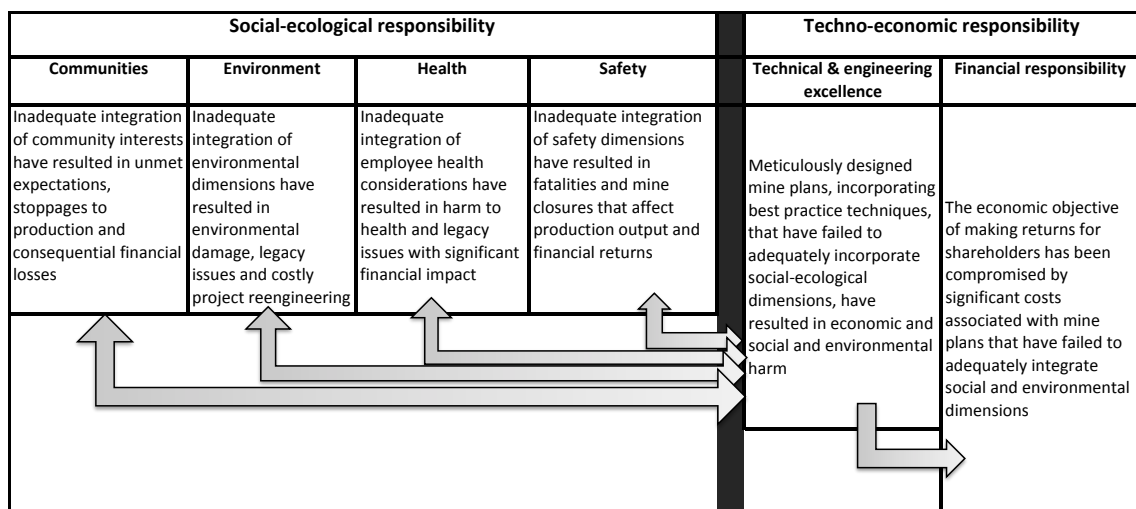


Figure three illuminates the interdependence of E&SE dimensions. Despite meticulous technical and engineering standards, and seeking best practice in social-ecological dimensions, failure to integrate E&SE dimensions into technical designs resulted in social-ecological harm and mine closures and stoppages. These consequences reduced production outputs, incurred associated with social-ecological harm and involved timely and costly re-engineering of mine plans that negatively impacted on revenues and responsibilities to shareholders. Seeking excellence in each dimension within isolated areas did not culminate in organisational outcomes that were perceived to be responsible. Instead, despite concerted efforts to be responsible in each area, failure to effectively integrate differentiated E&SE dimensions into mine plans led to irresponsible outcomes on an organisation level, resulting in *responsibility ambiguity* for organisational members.

My understanding of E&SE integration took an interesting trajectory when organisational purpose was analysed alongside organisational identity. Perhaps the most significant example of the organisation's current state of identity ambiguity was found on the company's website. Whilst exploring secondary data during 2014, a change in the founder's purpose statement caught my eye. The original statement, penned in the 1950's, is "the aim of this group is, and will remain, to make profits for our shareholders, but to do so in such a way as to make a real and lasting contribution to the communities in which we operate". The same quote, by the now deceased founder, replaced 'shareholders' with 'stakeholders'. This change reflects the societal debate in sustainability circles of what the purpose of the firm is, or should be, and is perhaps an attempt by some members of the organisation to reflect a more integrated identity.

Comments by research participants painted a different picture of member's understanding of the organisation's purpose. Member comments about the purpose of the firm revealed interesting insights about different perceptions of the firm's purpose. Perceptions about AA's purpose ranged on a continuum from a purely economic one, to one that integrates E&SE dimensions within the purpose. Member' perceptions based on a purely economic purpose typically confirmed the industry identity of the company as "a mining company" and proceeded with an explanation of the company's economic responsibility to make money and returns to shareholders. Although the study does not offer a representative sample as it was not designed for this purpose, it is noteworthy that the vast majority of research participants recognised that the company's primary responsibility was to make money and returns to shareholders, coupled with a secondary or ancillary purpose to do

so in a responsible manner (including concepts such as sustainability and social-ecological responsibility).

Although AA progressively emphasised corporate sustainability and increasingly focused on integrating E&SE dimensions to enable such integration, member comments about the purpose of the firm recognised the organisation’s *a priori* priority of economic dimensions. The transition to becoming a sustainable corporation – one that integrates E&SE dimensions into organisational decisions and processes – was centred on a dominant economic purpose. Whilst sustainability was a stated and accepted business imperative, there was no commonly accepted purpose, or overarching frame, that enabled the integration of E&SE dimensions in a way that did not prioritise economic dimensions at the expense of social-ecological dimensions. An employee in S&SD offered an interesting example of a meeting in which different priorities emerged in opposition. The example suggests, and illustrates, the need for a purpose that can integrate different purposes within the organisation.

I was sitting in a meeting the other day where we were looking at our waste issues in a legally and responsible manner... There were managers, advisers, legal advisers, multi-disciplinary [representatives]... The senior managers in the environmental discipline were saying, ‘This is what we are here for. We produced this waste and we need to sort it out and this is how we should be doing this’. The environmental legal advisor was saying, ‘if we don’t do it, I am not going to meet my legal requirements and I am going to be slapped with a fine’. You have one high level [person saying], ‘this is the right thing to do and you have another saying, ‘I am going to be slapped if I don’t’. Across the disciplines you have engineering guys saying, ‘Well, just how much is that fine going to be? Is it really necessary for us to do this in that way? Can’t we just do it like this?’ There is a lack of consistent understanding both laterally and vertically in the organisation. That is probably also a communication of our vision and purpose and goal. (SES).

Findings suggest that purpose is an important guide in decision-making processes framed by competing demands. Purpose could transcend competing interests, such as tensions between the short and the long term, under certain condition during decision-making processes. Table 11 reflects quotes about how purpose can enable better and/or more integrated decision-making by transcending tensions between competing priorities.

Table 11: Member comments about purpose

“You want the purpose of your company - if it is around integration - to be clearly stated in a simple way so that people constantly come back to <i>what are we about?</i> ” (CAA4)
“Because a project has a positive NPV, we must do it. No! We must think about why we are doing it. And is it the best thing to be doing?” (ER)
“The context is the life of a mine - which can be anything from as little as five years - in some cases 50 or a 100 years. So there is a tension - short versus long term. Now that is a tension that we wrestle with all the time. But the manager making the right decisions for optimising the purpose of the business - if we understand that - then you can manage the tension.” (M3)

Organisational purpose seems pertinent in the presence of competing interests and priorities within a firm's decision-making processes. Purpose has the potential to be more than merely transactional. It can, under certain conditions, act as a decision-frame that can integrate or transcend tensions between competing purposes. Drawing on such a purpose may lead to different outcomes in decision-making processes.

3.5.1. Reframing purpose enables commitment to integration

The analysis reveals that reframing purpose has been employed at AA to manage the tension between E&SE dimensions in order to enable integration in decision-making processes, at different levels of the firm. While the focus of the study is on the cross-functional decision-making process, the inductive analysis of the interviewees revealed how purpose is employed to enable integrative decision-making within and across functional teams.

The cross-functional project development team consists of between 12 and 20 individuals, representing different functional areas with different purposes and priorities within the organisation. Gaining commitment to the integration process was a complex process because individuals were identified with different aspects of the organisation's responsible identity. Members' priorities were also aligned to the goals of their functional domains that they represented in cross-functional decision-making processes, and they were often incentivised and rewarded by the achievement of these goals. During a protracted discussion with one manager, he conceded that integration was indeed important but that he felt compelled to "fight" for the priorities of his functional domain.

In the before process, project managers failed to integrate E&SE dimensions primarily due to time and budgetary pressures. Their business case approach to the project development process eliminated, rather than explored tensions between competing priorities. This resulted in a lack of understanding with respect to how E&SE dimensions were interrelated in a unique project context. The after process was intentional about gaining commitment from all members of the cross-functional decision-making process at the outset of the process. Gaining commitment involved each member gaining understanding of how E&SE dimensions were interrelated with respect to their functional goals, and with respect to the larger project. This process required both individual understanding of the value and purpose of participating in a collective decision-making process, as well as collective understanding of an overarching purpose. A project manager commented on the overarching purpose:

It is very important, actually, to have an initial combined discussion with all members of the team, highlighting why the things should be done in an integrated manner. It makes life much easier... They have to within themselves, inherently believe that we are doing this for an important reason... and why it is so important for the business. (PMBU1).

The process is more than collective; it includes a process of integrating individual identifications with the organisation's fragmented identity, in order to ensure commitment from different individuals who may be resistant and may not understand the value of E&SE integration with respect to their priorities. A manager commented that a PMs' lack of understanding leads to a mechanistic, rather than an integrated approach to project development. A project manager noted that if individuals don't understand the value of integration, they do not participate. Participant comments in table 12 below illuminate the importance of the individual aspects of gaining commitment.

Table 12: Member comments about individual commitment to E&SE integration

"A project manager should really understand the underlying intent. Why do I have to do this stakeholder engagement and how does that then impact on my project going forward? I think once you get to that point and once you have a manager who sees it like that, then your integration will happen, but as long as your PM is just being mechanistic in the way that they are managing, it is going to remain within silos." (SMBU3)
"If people do not understand 'what is in it for me in this process', they withdraw. But if you demonstrate to them the benefits, it is very easy to gain their trust and understanding..." (PMAA)

Although an initial combined meeting of all the members of the cross-functional team is essential at the outset of the process of E&SE integration, it is not sufficient to gain committed participation to the activities that are necessary for E&SE integration. The process of gaining commitment involves integrating individual priorities, based on individual identification with different aspects of the organisation's responsible identity, around a common purpose, in meaningful ways. A consultant to AA who was instrumental in co-developing AA's E&SE integration process proposed that the collective purpose of E&SE integration is about "making better decisions".

In order to commit to the process, each member needs to be individually convinced of the purpose and value of E&SE integration – that it is important and how it is valuable to them, given their priorities. Gaining individual commitment involves using different terminology for sustainability and demonstrating the concept by applying it to business processes that are relevant for particular individuals. The use of relevant examples include "delays in projects, overrun in costs, demonstrating that if we do such and such activities, we will be saving x amount of money or will be shortening the time required for

authorisation” (PMAA). Although the overarching purpose is to make better decisions, everyone needs to understand how this purpose relates to their priorities and how participation in the E&SE process benefits the organisation at large. A project manager explained the challenge of gaining commitment from different members of the cross-functional decision-making process:

...Convincing internal stakeholders to the value of the process. These people are on the decision-making level and if I don't win them over, my project delivery is going to be impacted - or rather is already impacted.... I think there is still quite a bit of work to be done. I think it is more about winning the minds and souls of people, more than anything else. Yes “green” costs money, but it can also save money. (PMAA).

Reframing purpose to gain commitment involves helping individuals understand the value and purpose of E&SE integration in a ‘language’ that they understand. This involves changing terminology to reflect the purpose of integration. A project manager noted that demonstrating the benefits of integration to members in meaningful ways helps to facilitate understanding and builds trust. Table 13 illuminates how meaningful language attracts attention and enables integration.

Table 13: Language facilitates understanding

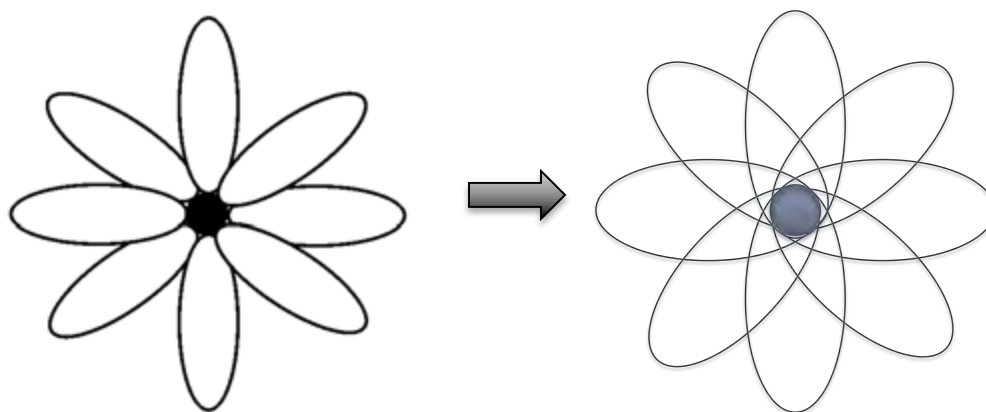
“Fundamentally I am a scientist and an engineer and I do tend to think like they do. But having seen the other side of the coin in the environmental and sustainability space, I know that if I can equate something into risk or money, I know I can get the attention of someone in risk or operations... If you can equate something to risk to the business - whether it be monetary or reputational risk - it really helps to get people to focus on it... I think it is just putting it into a language that people can understand and that is meaningful to them.” (MSD6)
“I changed the name because of the generation gap that sustainability is something that is nice to have but does not really add value. [I benchmarked] it to their frame of reference... I used the term environ-technical optimisation and explained what it means with the tangible results that we have achieved.” (PMAA)

Reframing purpose to enable the integration of competing priorities in cross-functional teams involves more than an abstract purpose statement such as “making better decisions”. Instead, it also involves a number of different understandings of purpose that are meaningful for each individual team member. A manager in S&SD commented on the importance of individuals understanding the purpose of integration and believing in the importance of it for themselves.

...Why it is important links to the purpose... They need to... inherently believe that we are doing this for an important reason... The only way that the business is going to shift... is when they - the project manager or that general manager or even the guys on the ground - inherently - it is in the heart - believe that it is... better. (SMBU).

Reframing an integrated purpose involves shifting member understanding from simply combining different, often competing purposes - to understanding the interdependence amongst these different purposes. During this shift, the overarching purpose statement is embedded in individual understanding of the value and importance of E&SE integration. Table four, below depicts this shift from a purpose that combines the purposes of different functional domains, to a integrated purpose – a metaframe that reflects a conceptual synthesis of different statements of purpose that convey the value and purpose of an integrated approach in meaningful ways to different individuals.

Figure 4: Shifting from independence to interdependence



The first “flower” in figure four represents the status quo where members are identified with their functional area (petals) and understand how their functional purpose and priorities contribute to a core purpose. They do not, however, understand how these are interrelated with other dimensions and priorities within the firm. The second “flower” in figure four represents members’ understanding that their purposes and priorities are interconnected with others in meaningful ways, such that they are interdependent of each other to achieve both their individual and organisational purposes. The shift from the first to the second flower enables individual commitment to participate in an integrated decision-making processes. I refer to the second flower as an integrative metaframe or an integrative purpose.

An integrative decision-making process typically starts with a two to three day workshop. Gaining individual commitment is essential to enable commitment and participation in this integration workshop. Therefore, helping members understand the individual and collective value of integration is pertinent. A member of the integration team commented that they “could have written a recommended practice - which we did - in three weeks and sent it to all the business units and it would have gone absolutely nowhere” (MSD4).

In stead, the integration team went to great lengths to gain commitment from different individuals. A manager in S&SD, who was part of the original team that designed the integration process, commented on the process of gaining commitment from individuals.

We have a rule in our team. If you ask anybody in the team they will say the Rule of 14 - that is on average the number of times you need to communicate to really get the change embedded. Some people get the message the first time around and for other people it takes a lot longer... This was all about managing change. (MSD4).

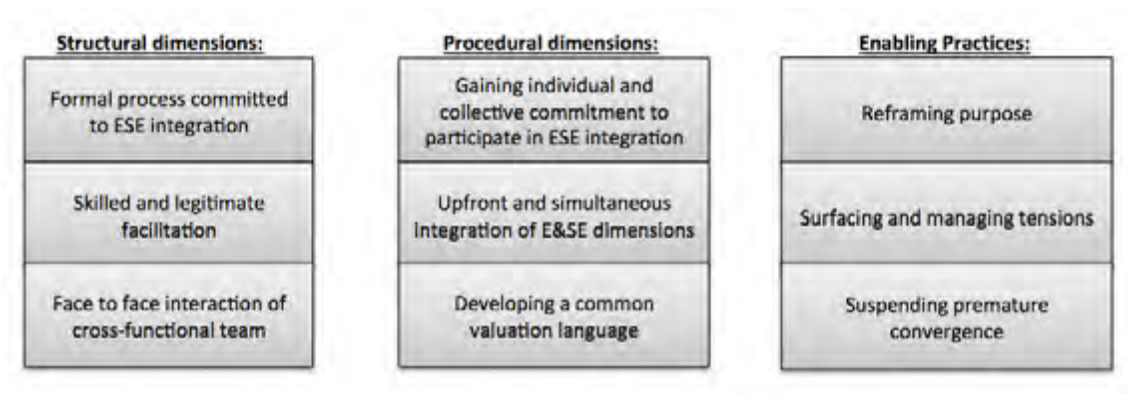
During a simulation of AA's intentional integration process, I observed an aspect of an integrative purpose, that incorporates different member's priorities, was crafted to elicit individual commitment to participate in the integration workshop. A facilitator explained the importance of an integrated approach by using examples and anecdotes that framed the value and purpose of an integration process with reference to different perspectives and priorities in the room. Examples included an explanation of why the existing, project process failed to adequately integrate E&SE dimensions; how the changing social-ecological context was compelling mining companies globally to deal with a lot more "out of the fence stuff" in order to extract ore; and how the company incurred significant financial losses as a result of sustainability issues, including an example of a recent project that incurred a sunken cost of US\$300m when AA had to prematurely exit the project due to significant sustainability issues. Each example addressed different organisational purposes (including economic, social and ecological) in the room, and was simultaneously anchored on a core purpose of "making better decisions". Each of these examples highlighted the importance of an integrated decision-making process in meaningful ways to different members with respect to their individual purposes and goals. Individual and collective understanding of the purpose and value of integration enabled a shift in members' selective identification with only one aspect of sustainability to identification with the other aspects as well. Although members tend to retain unique priorities, the shift in identification was sufficient to enable commitment to participate in an integrated decision-making process that involved members with different purposes working together to integrate E&SE dimensions in the project development process.

In summary, reframing members' understanding of the value and purpose of integration in meaningful ways, such that different individual priorities are understood to be interdependent with respect to fulfilling individual and collective purposes, enables commitment to an integrated decision-making process.

4. Enabling dimensions of E&SE integration

During the analysis different enabling dimensions of E&SE integration emerged. These dimensions include three structural and three procedural dimensions as well as three practices that facilitate tensions that emerge during the process. The structural enablers are *a formal process committed to E&SE integration, skilled and legitimate facilitation and face-to-face interaction of the cross-functional team*. The procedural enablers are *gaining individual and collective commitment to participate in the integration process, upfront and simultaneous integration of E&SE dimensions and developing a common valuation language*. The enabling practices that address tensions and paradoxes are *reframing purpose, surfacing and managing tensions and suspending premature convergence*. Figure five below identifies these enablers.

Figure 5: Enabling dimensions of E&SE integration

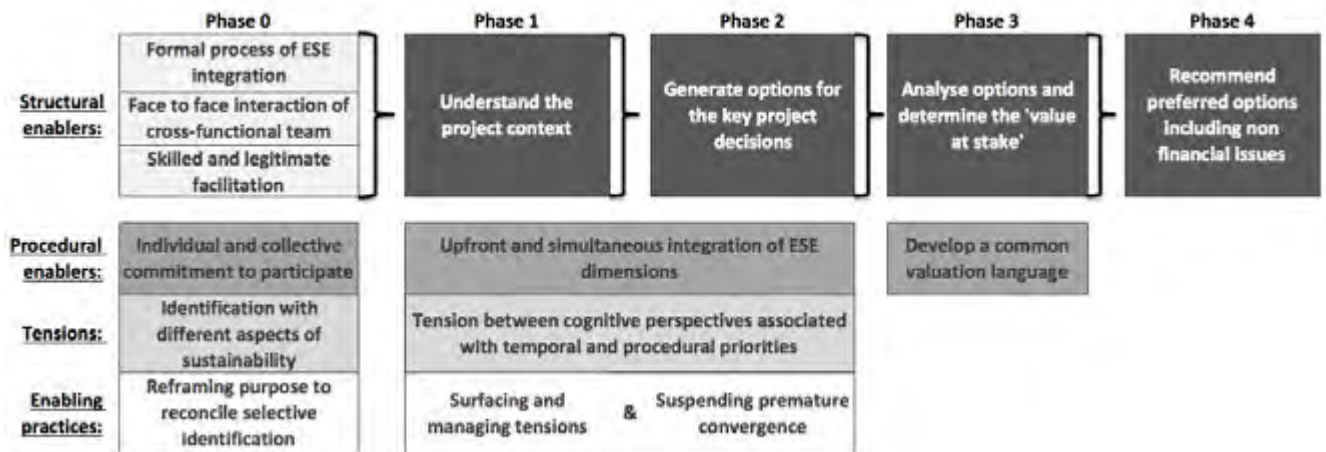


These dimensions dynamically address the aspects of the before process that constrained integration.

5. The process of integrating dominant economic and social-ecological dimensions

The inductive analysis of the case data culminated in a process model of E&SE integration, depicted in figure six, below. Phases one to four correlate with the phases of the formal process of integration at AA. The enabling dimensions of E&SE integration - structural and procedural enablers and enabling practices - are built around these four phases. Taken together, the phases, structural and procedural enablers and the enabling practices, form the process of E&SE integration. Figure six visualises the process model of E&SE integration.

Figure 6: Process model of economic and social-ecological integration



Phase zero comprises structural enablement through a *formal process of E&SE integration, face-to-face interaction of a cross-functional team* and *skilled and legitimate facilitation*. Although the structural enablers are initiated at the outset of the process, they cut across the entire process. The formal process gathers members from cross-functional areas to work through the different phases in order to formally integrate E&SE dimensions into the project development process. Face-to-face interaction enables the cross-functional team to share expertise, understand different E&SE dimensions and explore their interdependence. Face to face interaction is enabled by a legitimate, skilled facilitator with recognised knowledge of each of the functional areas. Phase zero is characterised by tension between individuals with competing priorities and purposes and requires a process of gaining commitment to participate in a time consuming, integrative decision-making process that competes for scarce time and resources. The practice of *reframing purpose to reconcile selective identification* enables a shift from selective, to collective identification with E&SE dimensions. This shift is based on meaningful understanding of how E&SE dimensions are interdependent with respect to achieving individual and collective organisational purposes. Such understanding fosters commitment to face-to-face interaction in an integrative decision-making process.

Phase one involves participants understanding the project context and identifying material sustainability impacts on the project. This phase is characterised by two pertinent tensions that emerge between competing cognitive perspectives. A temporal tension between short- and longer terms E&SE impacts and a process tension between convergence and divergence, emerges during phase one and two. *Upfront and simultaneous interaction of E&SE dimensions*, through the interaction of knowledgeable subject experts, enables members of the cross-functional decision-making process to

understand the interrelationships between different dimensions, before converging on a solution. A facilitator enables such understanding by *surfacing and managing tensions* between different cognitive perspectives by drawing out differences, challenging assumptions and stereotypes, facilitating robust conversation, managing individual egos and translating terminology and subject specific language.

Phase two involves generating options for key project decisions, ensuring that all alternatives together with their sustainability implications have been considered. During this phase multiple different options are developed based on different combinations of E&SE dimensions. Phase two is characterised by tension between early convergence on a single option and creating time and space to diverge, and explore different alternatives before making binding choices. The practice of *suspending premature convergence* prevents premature judgment and elimination of information and options, and creates time and space to explore the interrelationships between E&SE dimensions before converging on a single option.

Phase three involves analysing the options and determining the cost of the potential impact of each option, referred to within the company as the *sustainability value at stake*. During this step participants consider what scenarios might play out during the life of the mine and they endeavour to value a best case, worst case and likely case for each scenario. Different valuation and measurement languages, particularly with respect to integrating dimensions that are typically measured in either quantitative models or qualitative descriptions, constrain integration during this phase. Developing a common valuation language enables integration and comparison of different integrated options.

Phase four involves choosing a recommended option and proposing it to top management decision-makers, together with qualitative information that could not be adequately integrated into the options evaluation process.

5.1. Limitations of the process model

This section discusses a number of limitations with respect to the process model and suggests areas of further research in some of these areas.

A limitation of this process model is that it does not guarantee a sustainable outcome. The process of E&SE integration manages the tensions associated with precedence of economic dimensions that ordinarily avoids tensions between E&SE dimensions. It creates space and time for members of the cross-functional decision-making process to

explore the interrelationships between E&SE dimensions, together and upfront in the decision-making process. The process allows them to develop, value and compare alternatives before converging on a single option. The process attempts to bring future uncertainties, such as the economic and/or social-ecological impacts – typically measured in both quantitative and qualitative ways - into less uncertain, and less complex, comparable decision-options. The process converges on a single, viable option that will satisfy shareholders and relevant stakeholders. Although the process encourages transcendent solutions, that integrate competing E&SE dimensions in innovative ways, such transcendence cannot be guaranteed. Solutions in the form of complex project plans, involve multiple decisions about the various interconnected aspects of the project, and may include transcendent solutions as well as trade-offs. Such trade-offs may include mitigation of social-ecological harm, or planning a contingency in the event that there is a significant probability, but not enough certainty that a social-ecological risk may occur. The process-model recognises that E&SE dimensions are interdependent such that economic gain may indeed cause some social-ecological harm, however, the value of the process in this regard is that it embraces and explores tensions between E&SE dimensions, brings all potential negative and positive impacts – over different time frames - to the forefront, confronts them at the outset of the process, and makes provision to either avoid, address or mitigate such impact. This approach may be untenable to some individuals whose purpose is to avoid social-ecological harm at all costs. Although zero E&SE harm is indeed an ideal outcome of such a process, it is unlikely in context such as the extractives industry where economic gain is dependent on significant social-ecological disturbance.

A further limitation is that the outcome of the process is a single, recommended option to senior decision-makers. The final decision remains subject to the cognitive frames and foibles of ultimate decision-makers. In addition, despite significant efforts to translate all quantitative and qualitative dimensions into a single, comparable “language”, some social-ecological information does not easily integrate into the E&SE integration process. Such considerations are included as qualitative explanations together with the recommended option. It is debatable how effectively senior decision-makers integrate such qualitative aspects into the decision-making process.

The level of authority, knowledge and experience of the cross-functional team members could be a further limitation. Member comments alluded to the fact that some team members did not have the right level of authority or knowledge to make a meaningful

contribution during the process of integration. Future studies could explore the influence of authority, knowledge and experience on E&SE integration.

A potential limitation of the model is dual representation of different dimensions within a cross-functional team. In some cross-functional teams, members sometimes represent two different portfolios, such as marketing and sustainability. The study offer some evidence to suggest that team members default to their dominant priority during decision-making, thereby silencing the 'voice' of the second dimension they represent – which is often a social-ecological dimension. Further research could explore the effect of dual representation on E&SE integration.

The behaviour competencies of individual team members could be another limitation because integrating E&SE dimensions is a socially constructed process. The study offers some evidence to suggest that those behavioural competencies include: a humble attitude, willingness to learn from others, valuing other opinions alongside your own, the ability and willingness to influence, 'seeing broadly', engaging with empathy, being patient and persistent in the face of resistance and being resilient enough to try different and tailored strategies in the process of influencing others. Although the role of the facilitator mitigates for some of these competencies, future research could explore how behavioural competencies enable or constrain E&SE integration processes.

In conclusion, this chapter reported on the findings of the inductive analysis. The chapter explores five dimensions of differentiation between the process of integration at AA, before and after the introduction of an intentional E&SE integration process. The analysis culminates in a process model of E&SE integration. The model enables integration by addressing the tensions that constrain E&SE integration, with different enablers and practices. . The next session discusses these findings in the context of extant literature.

Chapter Five: Discussion and Conclusion

In this chapter I provide an overview of the study, discuss my findings by enfolded them with literature, and discuss the theoretical contribution of the study. Thereafter I discuss the limitations of the study, offer suggestions for future research and make my concluding remarks.

1. Overview of the study

This thesis contributes to our understanding of the integration of economic, social and environmental dimensions in corporate sustainability (Hahn, Pinkse, et al., 2014). The emerging integrative view on corporate sustainability (Gao & Bansal, 2013; Hahn, Pinkse, et al., 2014) argues that organisations “need to address economic, environmental and social aspects simultaneously without, *a priori*, emphasising one aspect over another - even if this entails tensions and conflicts” (Hahn, Pinkse, et al., 2014, p. 312). There is a gap in theoretical understanding of how organisations with an *a priori* priority, in particular a dominant economic priority – integrate E&SE dimensions. This is significant because many corporations who approach integration with a dominant economic, or instrumental orientation (Hahn, Pinkse, et al., 2014; Hockerts, 2014) have failed to integrate material social-ecological dimensions (Hahn & Figge, 2011) resulting in unsustainable and harmful outcomes. This gap is pertinent on the middle management level where many influential decisions form part of the design of a solution, and where competing, interrelated priorities need to be integrated. I explored this gap in corporate sustainability literature by drawing on three theories that helped me understand the research problem: paradox literature illuminates individual and organisational responses to competing, interrelated priorities (Lewis, 2000; Smith & Lewis, 2011); organisational ambidexterity theory illuminates understanding of how organisations integrate highly differentiated priorities (Gibson & Birkinshaw, 2004; Tushman & O’Reilly III, 1996); and organisational identity guides issue interpretation and action in organisations (Albert & Whetten, 1985; Dutton & Dukerich, 1991).

These theoretical lenses helped me to understand and address the research question: *How do organisations integrate predominant economic dimensions on the one hand, and social-ecological dimensions, on the other?* The research explored E&SE integration in a single case study. The research setting was revelatory because the century old, multi-national mining company, Anglo American, had been grappling with E&SE integration for a few years and had initiated intentional interventions to facilitate E&SE integration in organisational decision-making processes on the middle management level. The

exploration focused on the formal process of integration that forms part of AA's capital projects development process. Qualitative data from interviews, observations and secondary sources were analysed using categorising and connecting strategies. The inductive analysis included a comparison of the organisation's E&SE integration process before and after the introduction of a formal process of integration. The comparative analysis identified five dimensions of differentiation between the two processes, namely corporeal dimensions, temporal dimensions, cognitive dimensions, dimensions of precedence and identity dimensions. These dimensions were each further explored. The exploration revealed three structural and three procedural enablers of the process of E&SE integration, together with three practices that facilitate the management of tensions that emerge during the process of E&SE integration. The structural enablers are *a formal process committed to E&SE integration, skilled and legitimate facilitation, and face-to-face interaction of the cross-functional team*. The procedural enablers are *gaining individual and collective commitment to participate in the integration process, upfront and simultaneous integration of E&SE dimensions, and developing a common valuation language*. The enabling practices that address tensions and paradoxes are *reframing purpose, surfacing and managing tensions, and suspending premature convergence*. The inductive analysis culminated in a process model of integrating predominant economic and social-ecological dimensions. The model interweaves the enabling dimensions that were inducted in the study together with four existing phases of the organisation's E&SE integration process.

2. Discussion

This section discusses the findings of this study and enfold them with extant theory in corporate sustainability, organisational ambidexterity and an emerging scholarly conversation that is revisiting organisational purpose.

2.1. Corporate sustainability

The study contributes to theory on tensions in corporate sustainability with a process model of how organisations integrate predominant economic and social-ecological dimensions within a cross-functional decision-making process on the middle management level of the firm. The model addresses the tensions that tend to constrain integration.

The integration of competing, interrelated E&SE dimensions in a context of economic predominance is constrained by different tensions on the middle management level. The integrative view of corporate sustainability recognises that economic, social and environmental dimensions are interdependent and often paradoxically related (Hahn,

Pinkse, et al., 2014), meaning that they are mutually constitutive, simultaneously interrelated and oppositional over time (Smith & Lewis, 2011). These interdependencies, however, are often hidden or ignored during decision-making processes. Despite knowledge of sustainability and policies that mandate integration, project managers often fail to integrate E&SE dimensions because of competing cognitive frames (Hahn et al., 2014) that significantly influence a team's decision-making process (Smith & Tushman, 2005). This findings concurs with extant literature that individuals – in this case middle managers - with a business case frame align E&SE dimensions with economic objectives and exclude material social-ecological information from decision-making processes (Hahn & Figge, 2011). They focus on the short term (Slawinski & Bansal, 2015), and neglect social-ecological dimensions with longer-term impacts (Hahn & Figge, 2011). They prematurely converge on a single option without allowing time and space to explore how E&SE dimensions are interdependent (Hahn, Preuss, et al., 2014). They also often fail to explore different alternatives and they tend to exclude qualitative social-ecological dimensions that are more difficult to include in existing decision-models.

The findings of this case study build on extant literature that, despite organisational commitment to sustainability, and managing knowing “they should be adopting such sustainability policies, they might not know exactly what to do with each one of them, how to effectively integrate them” (Eccles, Ioannou, & Serafeim, 2014, p. 2853). I argue that organisational strategy, rhetoric, policies and standards, while important, are insufficient to enable integration on the middle management level. Such integration requires an intentional, structured and facilitated process to embrace the tensions that constrain integration and facilitate understanding of the interdependencies between E&SE dimensions, before converging on a solution.

Upfront, as well as simultaneous integration

The study concurs with other theorists that E&SE dimensions need to be considered simultaneously to enable corporate sustainability (Hahn, Pinkse, et al., 2014), and to allow the tensions between them to surface (Lüscher & Lewis, 2008). It contributes to theory by identifying that simultaneous decision-making is not sufficient for the integration of E&SE dimensions in cross-functional teams on the middle management level of the firm. E&SE dimensions also need to be integrated upfront in the decision-making process because the complexity and the cost of project planning precludes changes to complex project plans, later in the project. Moreover, delaying such understanding results in significant unwanted and costly consequences for economic, social and environmental dimensions.

Upfront integration brings social-ecological dimensions from the background to the forefront at the outset of the process, surfacing often-hidden tensions between E&SE dimensions earlier in the process such that they may be embraced, instead of avoiding them in order to make decisions within time and budgetary constraints. Upfront and simultaneous consideration of E&SE dimensions also ensures that social-ecological aspects are deeply embedded in the project design process such that they cannot easily be “cut” when the organisation is experiencing financial difficulty.

At the middle management level, organisations need to be intentional about enabling understanding of the interdependence between E&SE dimensions, upfront in cross-functional decision-making processes, before converging on a single option. I find that, *suspending premature convergence* counteracts the exclusion of material social-ecological dimensions (Hahn et al, 2011, 2014). Suspending the dominant priority to converge before understanding the interdependence between E&SE dimensions creates time and space to explore different alternatives before converging upon a preferred solution.

Suspending premature convergence

The process of E&SE integration in the context of dominant economic priorities is characterised by a process-tension between divergence and convergence. The dominant priority to converge and bring all E&SE dimensions into alignment with economic goals is in tension with the need to diverge and explore different aspects and how they are interconnected with respect to the project context. Other tensions such as short term versus long-term orientations to measuring impact in the decision-making process appear to be nested within this tension. A dominant priority to converge on a single solution constrains exploration of the interdependencies between E&SE dimensions and inhibits the search for alternative solutions. Intentionally managing the tension between convergence and divergence is essential for integration that requires both divergence that enables understanding as well as convergence on a single solution as an outcome of the decision-making process. In a context of economic predominance where time and budgetary pressures often crowd out exploration, *suspending premature convergence* creates time and space for exploration. A skilled, legitimate facilitator, working alongside the project manager, precludes individuals from prematurely judging information or options. The facilitator manages the tensions between individual cognitive frames and suppresses attempts to influence the decision-making process towards premature convergence.

Suspending premature convergence is distinct from other temporal strategies to manage competing, paradoxical or ambidextrous priorities in extant literature, such as temporal separation (Duncan, 1976; Poole & Van de Ven, 1989), and oscillation between paradoxical priorities (Jay, 2013) because it addresses different tensions associated with individual cognitive frames in sustainability.

Although suspending premature convergence involves temporal separation (Duncan, 1976; Poole & Van de Ven, 1989) of the two horns of the process tension, it is distinct from temporal oscillation, punctuated equilibrium and temporal cycling that involves “cycling through” (Gupta, Smith, & Shalley, 2006) periods of focusing on one or the other, or shifting between priorities (Duncan, 1976). The before process at AA was characterised by temporal separation that kept competing aspects apart. Since various tensions are interweaved, separating competing processes also precluded interaction between E&SE dimensions and led to temporal oscillation, rather than integration. *Suspending premature convergence* is distinct in that it suppresses the process-tension in order to bring another tension – in this case, the tension between E&SE dimensions - to bear. It creates time and space to elicit tensions between E&SE dimensions by suppressing the process-tension that separates them.

This case concurs with research on tensions between individual managers’ cognitive frames (Hahn et al., 2014), that paradoxical tensions emerge at different levels in the organisation and are similar at the individual and group levels (Smith & Berg, 1987) and that individuals tend to hold to extant frames instead of rethinking polarities (Lewis & Dehler, 2000). *Suspending premature convergence* at the individual level enables different frames to co-exist at the group level such that individuals who form part of the decision-making process can explore substantive tensions between E&SE dimensions. It is noteworthy that managing the process-tension between convergence and divergence, by suppressing the dominant priority to convergence, needs to be done in a skilful manner to ensure that individuals, whose priorities are suspended, continue to participate in the decision-making process to explore the tensions between E&SE dimensions.

Future research could consider how suspending premature convergence enables ‘staying with paradox’ (Vince & Broussine, 1996); how it enables plural perspectives in decision-making for corporate sustainability (Hahn & Aragón-Correa, 2015); and how it enables the exploration of social-ecological concerns over different timeframes, thereby addressing

concerns about short-termism and temporal myopia (Marginson & McAuley, 2007; Slawinski & Bansal, 2015).

2.2. Corporate sustainability and organisational ambidexterity

The architectural view of organisational ambidexterity maximises the benefits of different organisational aspects by structurally separating competing frames (Gilbert, 2006; O'Reilly III & Tushman, 2004). These highly differentiated dimensions tend to become independent, and therefore difficult to integrate. I argue organisations that exploit structure to enable differentiation for ambidexterity, also need to exploit structure to enable integration for ambidexterity. Such a structure as proposed in this study, enables face-to-face interaction of a cross-functional team, brings economic and social-ecological dimensions together by incorporating them upfront in decision-making processes and ensures that the process develops different options wherein the interrelatedness between E&SE dimensions can be explored before converging on a single solution.

The quality of cross-functional decisions on the middle management level

Extant literature has focused on how to integrate competing organisational aspects for ambidexterity on the senior management level. This study contributes to literature by identifying distinctions between integration at the top and the middle management levels. These distinctions relate to the quality of a decision and how such quality is achieved, in part by the locus of integration. Smith & Tushman (2005) delineate between a leader-centric and a member-centric team and posit that the quality of a decision on the top management level is predicated on the relationship between the leader and the members in leader-centric teams, and between members in member-centric teams. The cross-functional decision-making processes in the focal case included members with distinct roles, goals and rewards who did not ordinarily function as a 'real' team. As a result, a leader-centric team is necessary to initiate and drive the decision-making process. Members who form part of the decision-making process, however, need to explore and understand the complex interrelationships between competing, interrelated E&SE dimensions in some detail. This is distinct from the top management level where such detailed understanding of how individual E&SE dimensions are interrelated, is not as crucial. The salient knowledge resides in different members and since E&SE dimensions are embedded within each aspect of the solution, each member needs to understand how E&SE dimensions are interrelated with respect to the aspects of the solution that they are responsible for. This aspect requires characteristics of a team-centred team. Therefore, the quality of a decision on the middle management level is predicated on both the relations amongst members and the project manager, and - perhaps even more so -

amongst members of the team. Consequently, I find that a hybrid team that is both leader-centric and team-centric enables integration of competing, interrelated dimensions on the middle management level. This has implications for the locus of integration.

Sharing and shifting the locus of integration

Smith and Tushman (2005) found that in leader centric teams on the senior management level the locus of integration is vested in the leader, supported by a “supportive integrator”. The role of the supportive integrator (or facilitator) is primarily to supplement skills and facilitate the relationship between members and the leader (Smith & Tushman, 2005). I found that in cross functional teams on the middle management level, the locus of integration needs to be shared between a team leader (or project manager) and a legitimate, neutral, skilled and knowledgeable facilitator, oscillating from the one to the other as necessary to enable integration. This argument rests on two key findings. Firstly, the information that requires integration on the middle management level is too vast and too complex for a single manager to understand or comprehend. Secondly, in leader-centric decision-making processes, the locus of integration significantly influences the team’s ability to embrace paradoxes. Leader-centric decision-making processes are subjected to the leader’s biases and cognitive frames (Smith & Tushman, 2005). As mentioned above, E&SE integration for corporate sustainability is dependent on fostering fine-grained understanding between subject experts on the middle management level, of how their functional domains are interrelated, and how they impact on the project. The process involves developing and evaluating alternative options and then converging on a solution. Divergence is pertinent to the integration of E&SE dimensions as it involves the cross-functional team working through (Lewis & Dehler, 2000), and understand the interrelationships between different E&SE dimensions (Hahn & Figge, 2011). This involves ‘staying with paradox’ (Vince & Broussine, 1996) long enough to “explore contradictions rather than suppress them” (Lewis & Dehler, 2001, p. 723). This is enabled by a paradoxical, or both/and frame that facilitates integrative thinking, however, this frame is rarely found in individuals (Lüscher & Lewis, 2008). Although this study provides some evidence (see Appendix five) that an individual project manager could change their frame over time with repeated exposure to the process of integration, little is known about how either/or mind-sets (Lewis & Dehler, 2000) can be reframed to enable integration in cross-functional teams on the middle management level. Scholars have found that paradoxical enquiry is a skill that can be developed, however, individuals are continuously tempted by old frames (Lüscher & Lewis, 2008; Westenholz, 1993). Although, in theory, it is possible to find individual leaders who can hold the

tension of different frames to enable and facilitate the sub-processes of divergence and convergence, these individuals are the exception, particularly in contexts such as the focal case where team leaders were project managers with technical/economic backgrounds. Therefore, I argue that the locus of integration needs to be shared and shifted between a project manager and a skilled facilitator with no perceivable bias. An external facilitator is often perceived to be more legitimate. Lüscher & Lewis (2008, p. 237) foreshadowed this finding when they wrote that, “paradoxical inquiry may be more effective when it is ... led by an external facilitator”. Partnering with an external facilitator requires humility on the part of the project manager, who recognises his/her inability to effectively integrate E&SE dimensions. The facilitator surfaces and manages tensions in order to facilitate fine-grained understanding of the interdependence between E&SE dimensions.

As mentioned above, little is known about the process of reframing competing, interrelated organisational aspects to enable the integration of E&SE dimensions on the middle management level. In the next section I discuss findings from an organisational identity/purpose lens that relate to this question.

2.3. Corporate sustainability and organisational identity/purpose

Reframing purpose as an integrative metaframe

The study contributes to an emergent field of research that is reviving the study of organisational purpose (Singleton, 2014) with an identity lens (Albert & Whetten, 1985; Lepisto, 2015). Findings from this study concur with extant theory that an overarching identity facilitates the integration of paradoxical priorities (Fiol, 2002). In the present case, however, influential members were selectively identified with the overarching ‘responsible’ identity of the organisation, which incorporated sustainability. Selective identification resulted in a fragmented overarching identity that failed to evoke a both/and frame in decision-making processes that required integration.

Foreman & Whetten (2002) propose a dual identification model that supports diversification and levels of identification with nested identities: higher level identification with a superordinate identity as well as lower level identification, provided that lower level identities are nested within the overarching identity. In the present case, however, members seemed more strongly identified with lower level identities, such as instrumental, or utilitarian aspects of *responsible* (comprising economic responsibilities to maximise production through excellent technical and engineering standards) or with normative aspects of *responsible* (doing the right thing with respect to social and environmental dimensions). Stronger identification with lower level identities than with a

superordinate identity resulted in selective identification with the superordinate identity. Instead of being nested identities, these identities acted as independent, undermining their interrelationships with other identities (Smith & Berg, 1987).

When individuals who are more strongly identified with lower level nested identities, gather in cross-functional decision-making processes, tensions arise between their perceived independence and their collective interdependence. Smith & Berg (1987) argue that when members of highly specialised, differentiated functions gather in a group, a *metaframe* – an overarching frame that holds the priorities of the different participants – needs to be created such that members can defer to it in order to resolve conflict, enabling them to express their unique part within a new, created whole.

In the context of corporate sustainability, individuals from highly differentiated E&SE functions in large corporations are both independent in their expertise and interdependent within the larger context of corporate sustainability. Their interdependence, however, is often underplayed in decision-making processes because they have no metaframe to enable the integration of competing priorities (Smith & Berg, 1987). The concept of a metaframe involves the creation of an overarching frame that integrates seemingly independent wholes that are interconnected in a larger system. Extant literature contains similar concepts to Smith and Berg's (1987) metaframe. These include an "overarching goal", or vision (O'Reilly & Tushman, 2004, p. 5), a core ideology (Fiol, 2002), an overarching identity (Benner & Tushman, 2015) an organisational purpose (Singleton, 2014) a paradoxical frame (Miron-Spektor et al., 2011) or a superordinate goal (Battilana et al., 2015). Fiol (2002) and Lüscher & Lewis (2008) identify it as a higher level of abstraction that can facilitate connections between polarised elements in a paradoxical relationship.

This study concurs with extant theory about the necessity for an overarching frame – or higher level abstraction - that reframes polarities into interdependent parts in order to facilitate collaboration. It adds to theory, however, by arguing that the metaframe also needs lower level of abstractions in order to be meaningful to different individuals in the decision-making process. I argue that reframing organisational purpose into an integrative metaframe enables integrative decision-making by eliciting a both/and frame during decision-making processes.

An overarching purpose that integrates polarities on the organisational level is essential but not sufficient to enable commitment to E&SE integration on the middle management level. The purpose also needs to be reframed in multiple ways such that individuals who form part of the decision-making process understand the value and purpose of the integration processes in meaningful ways. As such, a purpose that acts as an integrative metaframe reframes polarities in a higher-level abstraction, and reframes the higher-level abstraction at lower levels such that interdependent parts understand their interdependence in meaningful ways with respect to their priorities. Creating such a metaframe involves motivating and anchoring strategies. Motivating, on the one hand, involves sensebreaking (Pratt, 2000), which demonstrates to individual members that failing to integrate E&SE dimensions is detrimental to their individual goals and priorities. Anchoring, on the other hand, involves sensemaking (Pratt, 2000), that centres individual goals and priorities on a shared purpose such as “making better decisions”. Such a shared purpose, however, is necessary but insufficient to enable integration. An additional step is required whereby lower level purposes are reframed around the shared purpose such that individuals understand how the achievement of their purposes and priorities are interdependent with other parts in order to achieve both individual and shared purposes. Identification with such a socially constructed metaframe brings about a shift in understanding about each functional area - from purely independent *wholes* to interdependent *parts of a greater whole* (Smith & Berg, 1987), and fosters understanding of their interdependence. Since identification enables commitment (Ashforth, Harrison, & Corley, 2008) such a metaframe facilitates commitment and participation in an integrative decision-making process.

An integrative metaframe of purpose paves the way for corporeal interaction and simultaneous consideration of E&SE dimensions in a cross-functional decision-making process. While members retain their dominant priorities, the shift is sufficient to enable commitment to and participation in an integrated decision-making process. As members construct personal meaning about the need for integration, identification shifts to incorporate other dimensions. Although they may retain their dominant identification with a particular nested identity, the shift from independence to interdependence is sufficient to facilitate understanding of the purpose and value of an integrative decision-making process. Since identification fosters commitment (Foreman & Whetten, 2002), this shift in identification fosters commitment to the process of integration.

Purpose, reframed in this way can act as a metaframe for integrated decision-making on the middle management level. Singleton (2014) likens organisational purpose to an “umbrella construct” (Hirsch & Levin, 1999, p. 199) that straddles more than one domain. This study finds that reframing functional purposes as umbrella constructs that straddle both instrumental (economic) and normative (social-environmental) dimensions in ways that are meaningful to a particular functional area, enables a shift from selective to plural identification with an overarching ‘responsible’ or ‘sustainable’ identity. These terms are themselves umbrella terms, but have been interpreted such that a particular aspect of the term has been prioritised at the expense of others. Consequently, I argue that the reframed purpose needs to integrate polar dimensions such that neither dimension is *a priori* prioritised above the others.

In summary, the study contributes to three theoretical conversations. The overarching contribution is to incorporate sustainability literature with a process model of E&SE integration on the middle management level that addresses the tensions that tend to constrain integration. Bringing social-ecological dimensions to the forefront and suspending premature convergence, enables integration, despite tensions between E&SE dimensions and between cognitive frames that seek to influence the decision-making process to prematurely converge on a single option. Suspending premature convergence enables exploration of the interdependence between E&SE dimensions before converging on a single solution, thereby avoiding costly consequences of unsustainable decisions and enabling the development of options that incorporate impacts over different time frames. The study contributes to an emerging scholarly conversation about organisational purpose by showing how reframing purpose into an integrative metaframe enables commitment to an integrated decision-making processes. The study also contributes to organisational ambidexterity literature by showing how the integration of strategic priorities on the middle management level is distinct from integration on the senior management level with respect to the quality of the decision and the locus of integration.

The next section discusses the limitation of this study, followed by suggestions for future research, before concluding.

3. Limitations

Various limitations of the study and the process model have been discussed in relevant chapters throughout this study. The overarching limitation, however, is that this study is first of all concerned with an ideographic account of the case, accompanied by a thick description intended to aid understanding. The thesis also aims to make a theoretical

contribution through extracting concepts and portable principles that are built into a conceptual process model that builds emergent theory (Gioia et al., 2013; Langley & Abdallah, 2011; Langley, 1999). Therefore, the study offers qualified transferability as the portable principles can be transferred to other cases provided that they recognise similar contextual realities from the thick description (Guba & Lincoln, 1982).

4. Future research

The process model of E&SE integration is emergent and invites further research, theoretical refinement and challenge.

This study explored the process of E&SE integration in the context of economic predominance. Future research could explore E&SE integration in processes dominated by social-ecological priorities. E&SE integration is important for sustainability, not only within corporations and in the private sector but also within other domains such as the public sector. Within the private sector, research in other industries could explore how E&SE integration differs from the extractives industry. Future research could also explore how different government departments integrate E&SE dimensions within decision-making processes.

This study focused on the middle management level of the firm. In order to gain a multi-level perspective of cross-functional integration, future research could investigate integration on lower levels of the firm. A related research question involves the changing dynamics and dimensions of E&SE integration as it cascades from top leadership to the coalface. Member comments in this study seem to suggest that the focus shifts from understanding why integration is important, to understanding what to integrate and how to integrate it – often with inflexible policies that preclude integrative thinking on lower levels of the organisation. Some comments suggest that on the lower levels, understanding why, what and how is essential to enable integrative thinking. Future research could explore this question of how to enable E&SE integration on different levels of the firm as the organisation matures and sustainability cascades to lower levels of the firm.

The study suggests that there is a dynamic relationship between the inflexibility of best practice standards that are enforced on decision-making processes to ensure sustainability with respect to individual functions, and flexibility in order to integrate competing, interrelated dimensions. Non-negotiable standards in the context of sustainability can stifle integration because they disable creative thinking and different

solutions. They also fail to consider the trade-offs that are sometimes required in decision-making processes. The matter is complex because large corporations heavily rely on standards and policies to enable change, especially at lower levels. Future research could explore the dynamic relationship between flexibility and non-negotiable standards with respect to integrating E&SE dimensions.

Incentivising certain behaviours with respect to sustainability has been an on-going debate in the focal company and in the mining industry at large. While misaligned incentives drive the wrong behaviour, aligned incentives can also drive integrated behaviour, and some argue that incentives are altogether ineffectual for normative sustainability dimensions, such as safety. Future research could explore how incentives enable or constrain E&SE integration.

Findings in this study can be applied to the emergent practice of integrative thinking and future research could explore how these findings can be applied to the study of integrative thinking in management education.

5. Conclusion

This study explored how organisations integrate economic and social-ecological dimensions in decision-making processes dominated by economic priorities. The case study investigated E&SE integration on the middle management level of the firm and focused on a cross-functional decision-making process in a multinational mining company. The thesis addresses a gap in corporate sustainability around how integration takes place despite economic predominance when corporate sustainability demands that there be no *a priori* priority between economic, social and environmental dimensions. The process-oriented, revelatory case study explored changes in the organisation's integration process from the vantage point of the lived experience of purposefully sampled research participants, by using categorical and connecting analysis strategies. A comparative analysis of E&SE integration in the organisation's project development process, before and after the introduction of a formal integration process, revealed the differentiating dimensions between the two processes. These dimensions were explored in the findings chapter, and a process model for the integration of economic and social-ecological dimensions was developed.

The thesis argues that E&SE integration on the middle management level of the firm is characterised by tensions between paradoxical priorities. Failure to address these

tensions in decision-making processes perpetuates unsustainable outcomes. Organisational strategy, rhetoric, policies and standards for corporate sustainability, while important, are insufficient to enable integration on the middle management level. E&SE integration involves an intentional process that embraces the tensions that constrain integration and enable understanding of different E&SE dimensions, before converging on a solution.

The thesis contributes to the literature on corporate sustainability with a process model of E&SE integration that addresses the tensions that otherwise constrains integration. It contributes to organisational ambidexterity literature by showing how the integration of strategic priorities on the middle management level of the firm differs from integration on the senior management level. Furthermore, the study contributes to an emerging scholarly conversation about organisational purpose by showing how an integrated metaframe of purpose can shift selective identification with an overarching identity and enable commitment to integration. The study contributes more broadly to understanding how competing, interrelated organisational dimensions can be integrated in cross-functional decision-making processes.

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Appendices

Appendix 1: Interview protocol: Guidelines for semi-structured interviews

This interview protocol outlines the broad themes for discussion in the semi-structured interviews that are being planned for this research. Interviews may contain different elements of this interview protocol and the protocol might change over time as the researcher starts exploring emergent themes. Therefore, the questions below are currently framed to point to the type of answers that the researcher is looking for, but do not necessarily reflect the actual interview protocol for any particular interview.

1. Introduction of principal researcher

Nadine Meyer, PhD Student at UCT GSB, Allan Gray Centre for Values Based Leadership.

2. Overview of the project and purpose of the interview

The project involves research for a PhD degree that explores a better understanding of paradoxical management decisions in the tension between economic dimensions on the one hand, and social and environmental dimensions on the other hand (more generally framed as the tension between shareholder wealth maximisation and stakeholder issues in decision-making).

3. Confirmation of informed consent and recording permissions

Discuss the consent form and ensure that the participant is aware of the ethical clearance for the research and the non-disclosure agreement, and is willing to participate. Answer any questions the participant may have about the process and discuss the possibility of recording the interview.

4. Introduction of interviewee

Explore the research participant's professional background, history in the company and current position.

5. Discussion

5.1 Explore the context and the tension between economic and social-ecological dimensions

Questions will be framed to understand the participants experience with tensions between economic and social-ecological dimensions within the firm. Participants will be encouraged to share their experiences relating to actual examples with respect to their broader experience in the firm, as well as their experience within their current position/department. Some interviews will be of an elite nature that will only focus on understanding the company and its context, as well as identifying potential issues.

5.2 Explore economic and social-ecological integration

This section is dedicated to understanding more specific dynamics around E&SE integration. Questions in this section will explore the participant's understanding and experience with integrating competing priorities as well as integration within the organisation's formal integration projects process. Questions will include the participants view on enablers and constraints of integration.

5.3 Explore organisational identity, purpose and integration

Questions in this section will be framed in a way to understand the participant's understanding of the organisation's identity and its purpose. The discussion will include open-ended questions that explore the relationship between purpose and identity in decision-making and how purpose and/or identity affect integration.

5.4 Questions from the research participant to the researcher

Research participants will be invited to ask questions

6. Confirm that the research participant is comfortable with three aspects of the research

- i. The recording
- ii. Their desired level of anonymity
- iii. Their preferred title

7. Closing remarks

Closing comments include gratitude for the research participant's involvement in the research process as well as seeking permission to return to the researcher for clarification or for a follow-up interview.

Appendix 2: Interviewees, influential discussions and observations

1. List of Interviewees

Nr	Generic title for the purpose of reference*	Month of interview	Code
1	Manager in Safety and Sustainability (S&SD)	September 2013	MSD1
2	Manager in AA	September 2013	MRA1
3	Manager in S&SD	September 2013	MSD2
4	Consultant to AA	October 2013	CAA1
5	Manager in S&SD	October 2013	MSD3
6	Manager in S&SD	October 2013	MSD4
7	Manager in S&SD	October 2013	MSD5
8	Manager in Safety	October 2013	MSM1
9	Consultant to AA	October 2013	CAA2
10	Manager in AA	October 2013	M8
11	Employee in S&SD	October 2013	ESD2
12	Employee in AA HQ	October 2013	EAA
13	Employee in S&SD	October 2013	ESD3
14	Employee in S&SD	October 2013	ESD
15	Consultant to AA	October 2013	CAA3
16	Manager in AA	October 2013	MAA1
17	Manager in AA	October 2013	MRA2
18	Manager in AA	October 2013	MAA2
19	Manager in AA	October 2013	MRA4
20	Manager in S&SD	October 2013	SBU1
21	Manager in AA	October 2013	PMBU1
22	Manager in AA	November 2013	M1
23	Employee in AA HQ	November 2013	ER
24	Manager in AA	November 2013	M9
25	Manager in AA	November 2013	M2
26	Manager in AA	November 2013	MSM2
27	Manager in AA	November 2013	M3
28	Manager in AA	November 2013	MRA3
29	Manager in AA	November 2013	M4
30	Employee in S&SD	February 2014	SES
31	Miner	February 2014	MMR1
32	Manager in AA	February 2014	M5
33	Manager in AA	February 2014	MHR
34	Manager in S&SD	February 2014	MSD7
35	Manager in AA	February 2014	PMAA
36	Consultant to AA	March 2014	CAA4
37	Manager in AA	March 2014	MR
38	Manager in AA	April 2014	SMBU3
39	Manager in AA	November 2013	M6

40	Manager in S&SD	September 2013	MSD8
41	<i>Miner (withdrawn)</i>	<i>February 2014</i>	<i>MMR2</i>
42	Manager in AA (second interview)	February 2014	M7
43	Manager in S&SD (second interview)	October 2013	MSD9
44	Consultant to AA	October 2013	CAA5
45	Mine Supervisor	February 2014	MSR
46	Mine General Manager	April 2014	IMGM
47	Mine Manager	April 2014	IMM
48	Mine General Manager	February 2014	IMGM2
49	Mine Planner	February 2014	IMP

**Managers and employees in AA were from finance, engineering, reporting, risk, safety, project management, human resources, corporate affairs, planning, general management, review functions and different sustainability-related functions. Managers also represented different business units and different levels of seniority within the general category of middle management. These differences have been concealed to ensure anonymity.*

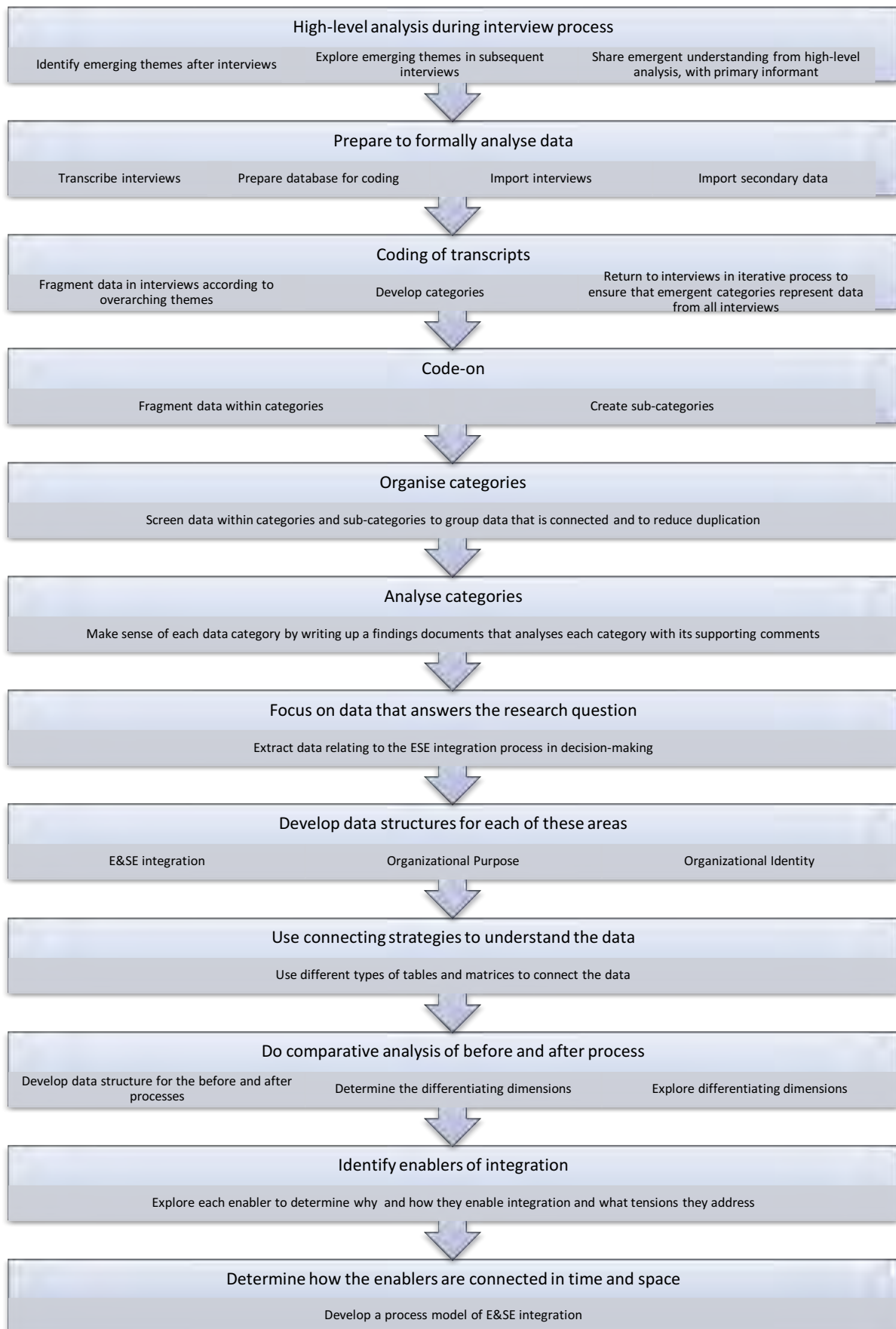
2. Influential Discussions

Nr	Influential Discussions	Month of interaction	Code
1	Exploratory discussion with a manager	July 2013	DP1
2	Exploratory discussion with two managers	July 2013	DP2
3	Discussion with a manager who influenced my thinking	March 2014	DMF
4	Discussion with Primary Informant	September 2013	DPI1
5	Discussion with Primary Informant	September 2013	DPI2
6	Discussion with Primary Informant	September 2013	DPI3
7	Discussion with Primary Informant	October 2013	DPI4
8	Discussion with Primary Informant	October 2013	DPI5
9	Discussion with Primary Informant	November 2013	DPI6
10	Discussion with Primary Informant	December 2013	DPI7
11	Discussion with Primary Informant	February 2014	DPI8
12	Discussion with Primary Informant	February 2014	DPI9
13	Discussion with Primary Informant	October 2014	DPI10

2. Observations

Nr	Type of observation	Month of observation
1	Employee Induction Training	September 2013
2	Multi-stakeholder meeting regarding Sustainability in Projects	September 2013
3	Sustainability Valuation Approach Workshop	November 2013
4	Safety Leadership Training	November 2013
5	Safety Training for Miners	February 2014
6	Mine Visit	February 2014
7	Mine Visit	March 2014
8	Mine Visit	April 2014

Appendix 3: Overview of the data analysis process



Appendix 4: Research participant information and informed consent

Principal researcher: Nadine Meyer [maiden name], PhD Student at UCT Graduate School of Business, Allan Gray Centre for Values Based Leadership. The researcher's contact email is [email address deleted].

Overview of the project and its purpose: The project involves research for a PhD degree that explores a better understanding of paradoxical management decisions in the tension between shareholder wealth maximisation and the integration of stakeholder issues.

What is expected from a participant? Participants engage in a semi-structured discussion around themes that highlight the researcher's topic, and aid her understanding of the context. This research has been approved by the Commerce Faculty Ethics in Research Committee. There are no known risks or dangers to you associated with this study. Unless expressly consented to, the researcher will not attempt to identify you with your responses or comments in this interview, or to name you as a participant in the study, nor will she facilitate anyone else doing so. Please note your desired level of anonymity below. If you change your desired level of anonymity during or after the interview, the researcher will adhere to your revised preference.

- Anonymity not required
- Anonymity of participant's name required
- Anonymity of participant's title required
- Anonymity of the participant's current professional discipline
- Anonymity of participant's department required
- Anonymity of participant's company required
- Other: _____

Recording the interview: Recording the interview will aid accurate data analysis after the interview. Should you be uncomfortable with the recording process, please indicate this to the researcher. You may change your mind about your decision during or after the interview or ask that certain sections of the discussion not be recorded.

- Permission to record granted
- Permission to record NOT granted
- Other: _____

Data obtained during the interviews will be kept with the same level of care that the researcher keeps personal information and no-one besides the researcher and her supervisors will have access to it.

I acknowledge that I am participating in this study of my own free will. I understand that I may refuse to participate or stop participating at any time without penalty. If I wish, I will be given a copy of this consent form.

Interviewee's signature: _____ Date: _____

Appendix 5: Individual level outcomes of the E&SE integration process

Participant voice	First order concept	Aggregate Dimension
“Every time he has got involved in a new project, he picks up the S&SD issues very quickly - and knows the questions to ask because he knows from other projects that this is an issue... He is starting to think S&SD. That is the big difference. Other project managers know that they have an issue with this but they still think that it is something that will still go away.” (SBU1)	Changing some PMs’ thinking	Changed attitudes and thinking
“Initiatives like the [integration process] are forcing [PMs] to understand these issues - where they would otherwise choose not to. They would choose to understand only the technical issues and the commercial issues - but not stakeholder issues. That is not the case across AA but certainly in some parts of the organisation it is.” (MR)	PMs are understanding E&SE dimensions	
“The PMs have certainly been very supportive of the fact that they know they need to do the process and they see value - certainly in the initial discussions in framing everyone's understanding.” (SBU1)	PMs see value in the process	
“...Especially for the mining guys they are sometimes quite stuck in their views on how a mine should be run. But once they participate in this process, their views in my opinion have changed. It is not the greenie beanies doing their own little exercises and wasting time and money. Actually this adds value.” (PMAA)	Changed perspectives on Sustainability	
“It changed the way people within projects think about projects and sustainability issues of projects.... [we have] had fantastic discussions and people have changed their thinking.” (SBU1)	Changed people and changed thinking	
“The fact that each project has a dedicated environmental person who sits on the project team through every single project meeting - that is also changing the attitude of the PM... The PM said to me, 'Since you started here, I have suddenly got all these headaches'. I said to him, 'You have not suddenly got all these. The headaches have always been there. You just have someone now who is drawing your attention to them'. That is the biggest change we are seeing on our project and the PM understands the environmental risks. Why? Because he has been through the process...” (SBU1)	Changing PM attitudes	Challenges remain
“We've had project managers who have been very receptive to it and I think their attitude has waxed and waned over the duration of the project depending on what the other project pressures are happening at that time... Still though, environmental and social issues are seen as a hindrance.” (SBU1)	Change takes time and some PMs are still resistant	
“We still have had projects saying sorry, I have to mine through all of these sensitive areas.” (SBU1)	The process does not guarantee <i>zero harm</i>	

Appendix 6: Participant quotes about the process

Concept	Participant Quotes
Intentional Process	<p>“We need a multi-disciplinary team around the table to understand the potential scenarios that can play out over the life of this project in a very structured fashion. It is not just a brainstorming exercise. [It involves working] through the risks and opportunities; the best case and the worst-case scenarios....” (SMD4)</p>
	<p>“Everybody knows that sustainability is important and everybody knows that you need to consult and everybody knows that your permits could impact on timelines but we had not explicitly made it part of the process.” (MSD3)</p>
	<p>“A lot of our difficulty... was the silo approach that is endemic in Anglo - and I think still is - but it is improving. Although the project [standard] clearly states that when you make a decision, you have to have all the subject matter experts in the room, it was not always happening. So we had to make it very explicit in our process. ‘Guys, when you are looking at your project context workshops and when you are looking at what are the value-drivers and key issues on this project, you need to have all those disciplines in the room - whoever you needed there.’ And as bizarre as it sounds, it was just not always the case... it was not always happening.” (ESD2)</p>
	<p>“It has just formalized doing that work together... rather than hoping it is just going to happen along the way... it gives you a guideline or a process by which to integrate... Having that formalized process, everyone can see exactly what is required and I think that, in my mind, makes it [simpler]. In the old days we still needed to do all of this - but almost subconsciously. You knew you had to do it and you knew you had to integrate it. Each individual PM would do it his or her way and try and come up with the same solution in the end. It is more difficult, you probably would not have got the same solution as easily as the fact that now you have a formal process in place.” (PMBU1)</p>
	<p>“The project-, engineering and planning guys don’t think ‘environment’ because they should. It is because it is written into our processes. We have... mandatory project stage gates that assess economic feasibility, technical feasibility, what environmental licensing will be required - and it tries to... avoid as much environmental damage as possible, up front... So it is fairly well entrenched and embedded because of those processes.” (SES)</p>
Facilitated Process	<p>“It is a process. It is not one meeting decides it all. It is a process.” (PMBU1)</p>
	<p>“One of the key roles is a facilitator with a very specific skill set to take the team through this process. The facilitator is a devil's advocate - constantly questioning - like a Socrates method - making sure people think.” (MSD4)</p>
	<p>“If this process is not facilitated but is left to run by itself, it is never going to happen.” (PMAA)</p>
	<p>“Sometimes not everybody around the table can link the issues together from each different discipline; context is lost, certain issues are not identified and then we end up with those manifesting themselves later on in the project.” (MSD3)</p>

	<p>“If you have an experienced facilitator who can drag out ideas out of people and put them on the table and then discussion and matching can happen, it is much easier.” (PMAA)</p>
	<p>“[The facilitator] gets to call on all the stereotypes of all the disciplines and really just challenge the way people are looking at a project.” (SBU1)</p>
	<p>“Depending on the scale of the project there can be anywhere between 12 and 20 people [representatives from different functions]... and [the facilitator] needs to be challenging us. From the specialist studies [they] need to be challenging the way that we are looking at this project and saying, ‘Actually that project is not good enough. That impact is not going to be accepted by society or the regulator’.” (SBU1)</p>

Appendix 7: The before process of E&SE integration

Participant Voice	1st order concept	2nd order concept	Aggregate differentiating dimensions
“In the past everyone was very much isolated.” (SBU1)	Functions work in isolation	Project teams work in isolation	Corporeal interaction
“The before process (and there are still aspects of this that take place) is very clearly a group of engineers sitting in a room by themselves, figuring out what they want to do and then coming to the environmental, safety and community people saying, ‘This is what we are doing, tell us what the risks are but basically this is it... this is what we are going to do’.” (SBU1)	E&SE dimensions are designed separately		
“The PM [would] say, ‘Environment, you go off and do your EIA... get all your stakeholder engagement done and once you have done it come and tell me and I will tick that box’.” (SMBU3)	Functions work in isolation		
“Sustainability considerations (safety, health, communities, environment, social, license to operate...) were considered very, very seldom in concept phase and if considered it would be very late in pre-feasibility phase. Normally they would come to SHE (safely, health and environment) and say, ‘this is the mine design... please tell us what are the risks from a sustainability point of view’.”(MSD3)	Economic dimensions are considered first, and social-ecological dimensions are considered towards the end of the process	Separate, and late integration of social-ecological dimensions	Temporality of interaction
[A particular project option used a local water source which was] “technically fantastic... and commercially the best option by miles - but from a sustainability perspective it was questionable [due to] the process that people [used to follow], where they looked at the technical and then at the commercial and then they have kind of come to sustainability [who] said, ‘guys, you are not going to be able to do this project because...’ - that is really why we are trying to bring this decision-making upfront.” (CAA2)			
“Before we did not have... the upfront expertise inputting into the project right upfront. So you sort of did it and then that expertise only came in towards the end and that is when you had to go back and re-engineer...” (PMBU1)			

<p>“Often you get people who don't really understand... They go down a road and they choose a solution and they understand there is a whole lot of risks here but they have not really thought about all those risks and what potential impact they might have on the project. So we go down a path and we get a solution and we try and find mitigation for those risks but often we don't necessarily look at what is the alternative and would the alternative be better... Often PMs are chasing the lowest capital cost so we often don't necessarily go and explore.” (ER)</p>	<p>The team choose an option before fully understanding the E&SE dimensions and associated risks and impacts on the project</p>	<p>Converge on a single option before understanding and integrating E&SE dimensions</p>	
<p>“Before [the formal integration process] there was integration but it would have been within particular disciplines. For example all the engineering disciplines would have their own integration whilst the environmental management - being compliance of existing licenses/authorizations and permits or applying for a new one - was somewhere in the afterthought.” (PMAA)</p>	<p>Interaction only between like-minded dimensions</p>	<p>Interaction between individuals primarily within functional areas</p>	<p>Cognitive dimensions of interaction</p>
<p>“PMs tend to be engineers and they tend to focus on quantitative things that they understand. I can measure how much steel to put in and I can draw drawings that tell me exactly what I am going to do but when you start talking about all the other things you need to do, it is not necessarily their core competence.” (ER)</p>	<p>Identifi-cation with different functions</p>	<p>Identifi-cation with different functions, focused on their own domains</p>	
<p>“There is still too much of a silo mentality. Therefore each discipline wants to prove that they are as good as the other. We very much still have a discipline approach which is not helping with integration.” (M8)</p>			
<p>“You can leave the engineers to do their work and they come up with all these weird and wonderful technical solutions - to discover very late in the process that the solution might not be acceptable from a societal point of view. Or, from a legal point of view.” (PMAA)</p>			
<p>“They would choose to understand only the technical issues and the commercial issues - but not stakeholder issues. That is not the case across AA but certainly in some parts of the organisation it is. I think as time moves on that level of person would be required to have more knowledge of all environmental, social and permitting issues simply because they are critical to the success of the project.” (MR)</p>	<p>Focus on understanding economic dimensions</p>		

<p>“Sustainable development is still looked at like something of a luxury on one side and from another point of view it is not necessary [viewed] as part of doing business.” (PMAA)</p>	Perceptions of sustainability	Resistance to change	
<p>“The older generation professionals don’t believe sustainable development is something tangible.” (PMAA)</p>			
<p>“If you have an old school guy who always did things a certain way, he will be very determined that that is the way it should be because that is what he knows.” (SBU1)</p>	Perceptions of change		
<p>“It is just seen as a schlep by the project managers because they still - most of them - are very old school and they come from an environment where you do the trade-off study and you do the financial model and it is finished.” (SBU1)</p>			
<p>“Project teams are focused on getting their projects up and running so it is very short term focused and ultimately... decision-makers struggle to look past a five year horizon. And a lot of our issues are long term with changing regulations and legacy issues and water pollution which may only happen if you are 10 years into your mine.” (ESD2)</p>	Focused on the short term	Short-term focus and premature convergence on economic considerations	Dimensions of precedence
<p>“PMs want to have the cheapest project because they have KPI's to meet and they have growth targets and they want things done fastest and cheapest...” (ER)</p>	Focus on speed and cost		
<p>“Before it was very biased towards a technical solution.” (PMBU1)</p>	Focused on economic dimensions		
<p>“[We had] one alternative that looks ok - but actually we have a whole lot of risks here but we have not really incorporated into our thinking and ...may not necessarily be the most attractive alternative because economically the consequences of all those risks probably outweigh the actual financial outcome.” (ER)</p>	Focus on a single option early in the process without considering alternative options	Premature convergence	
<p>“Project teams would say for example discard an option for technical and financial reasons and not progress with that option. But ultimately, when you looked... when you factored in the long term costs because of sustainability issues - actually those options were viable.” (ESD2)</p>			

<p>“PMs don't understand that trade-off because often we are so focused on looking at a financial outcome instead of weighing off the risk ... of a specific financial outcome versus the financial outcome of a different alternative and the risk that goes with that alterative.” (ER)</p>			
<p>“The problem when we are talking about issues around closure [is that] when you are discounting that [R100m in 40 year’s time] to today's money, it is negligible. Then the [PM] says, ‘we don't care because it does not change the NPV’.” (ESD2)</p>	<p>Focused on the short term</p>	<p>Valuation favors qualitative, short-term dimensions</p>	
<p>“In the past, everybody thought [NPV] is an easy topic. Everybody thought it is about calculating the NPV and picking the highest one... It was wrong. And it continues to be wrong. Wherever people do it and we still see nodes where people do it because they do not understand it. Should we not understand what the likely outcome should be of the upside and downside risk in 50 years time?” (M7)</p>			
<p>“Any business decisions that are going to impact on NPV early on in the life of the mine is going to be flagged pretty quickly. But particularly environmental and social issues are going to manifest over years and decades... and for example subsidence related to underground mining... you are only going to see that in 100 year’s time... But you have to make the decisions now... do you mine that area and how do you mine that? An NPV model just does not have that flexibility. So any decisions that help us get our permits, that can be demonstrated in the SVA model, that is the decision we must make.” (SBU1)</p>			
<p>“The fact that we need to reduce everything to a monetary value is the wrong thing but it is currently the only thing to do to get people to be aware of the issues that we have that are outside of productivity.” (SES)</p>	<p>Focused on quantitative dimensions</p>		
<p>“The financial models drive the whole decision-making exercise. Rightly or wrongly in my opinion there is an over-emphasis and reliance on the numbers and it is an invented number anyway in the case of NPV.” (MSD3)</p>			
<p>“The project with the highest NPV may not be the best one from a sustainability point of view.” (ESD2)</p>			

<p>“We often had [SE issues] as a qualitative risk - but never really quantified or sufficiently quantified the impacts and then do a comparison between one alternative and another.” (ER)</p>			
<p>“If people do not understand what is in it for me in this process, they withdraw.” (PMAA)</p>	<p>Team members not committed to purpose of E&SE integration</p>	<p>PMs and team members are not committed to the purpose of integration</p>	<p>Identity dimensions</p>
<p>“A PM should really understand the underlying intent. Why do I have to do this stakeholder engagement and how does that then impact on my project going forward? I think once you get to that point and once you have a manager who sees it like that, then your integration will happen, but as long as your PM is just being mechanistic in the way that they are managing, it is going to remain within silos.” (SMBU3)</p>	<p>PMs don't understand the purpose of integration</p>		
<p>“PM [would] say, 'Environment, you go off and do your EIA... get all your stakeholder engagement done and once you have done it come and tell me and I will tick that box.' Instead of actually looking at the underlying intent of why would one do stakeholder engagement... and that should actually be affecting the way you manage your project going forward.” (SMBU3)</p>			
<p>“It is a tick box exercise and... something additional to the work they have to do.” (SBU1)</p>			

Appendix 8: The after process of E&SE integration

Participant Voice	1st order concept	2nd order concept	Aggregate differentiating dimensions
<p>“If the mining guys can sit with someone from S&SD who can explain to them in a reasonable and rational manner why it should be like this, then you will make better decisions. That is what this is all about - it is about making better decisions.” (CAA2)</p>	<p>Cross-functional team, physically together</p>	<p>Face to face interaction of a cross-functional team</p>	<p>Corporeal interaction</p>
<p>“The process forces all disciplines into the same room to look at the options that are available and to propose options from a different knowledge base, a different mindset, a different attitude to mining.” (SBU1)</p>			
<p>“We need a multi-disciplinary team around the table to understand...what is the context you will be operating in today versus what you will be operating in when you are approaching closure?” (SMD4)</p>			
<p>“On a couple of projects we have come up with new options. You make sure that you've got people that are represented from all disciplines [and] sometimes during a conversation, because what someone else has said, you think, but actually what if we do this... Sometimes during the discussion... we come up with a hybrid of some of the options that are there... or someone says, ‘but actually what if we do it this way?’” (SBU1)</p>	<p>Collective process leads to different outcomes</p>		
<p>“The biggest change that SVA brought about is the realisation that not one person has the answer. You truly need a truly skilled multidisciplinary team around you.” (MSD3)</p>			

<p>“It is really about thinking about it upfront. So you are going to buy 50 of these load haul dumpers. These things cost R500m each. Clearly you are going to look at price and performance when buying. But as part of what you look at... we now say check the emissions, the noise, and the safety, health and environmental factors that go into the purchase before you do it and not after, and then buy smart because that will give you a long-term effect. It does not help for me to come after the event and say to the manager, ‘that vehicle is too noisy and now you have to take it away, throw it out and get a new one’. You can't do it. It is way too expensive. You end up saying you should have thought about that a long time ago. You have to design right. You have to get it into the engineering design. You have to design around safety and ensuring health. You design around not harming the environment.” (MAA1)</p>	<p>Integrating all E&SE dimensions upfront in the decision-making process</p>	<p>Upfront and simultaneous integration of E&SE dimensions</p>	<p>Temporality of interaction</p>
<p>“Now we have just brought everything right up front. It is the same process but everything together.” (PMBU1)</p>			
<p>“The earlier you start, the better. If you make earlier decisions you can have less liability going forward.” (M8)</p>			
<p>“By bringing in the SVA process... all of the longer-term mitigating environmental issues were factored into that business plan and all those options upfront.” (PMBU1)</p>			
<p>“Issues need to be identified very early on in the project phase... You need to be starting to look at the issues we are going to face and how we are potentially going to solve those problems. What I have actually found... is that too many of these issues are being addressed quite late in the project stage and often it is too late to actually address it properly - particularly with something like water.” (ER)</p>			
<p>“It just presents information in a different format so that when you go to the steering committee of the project, who is the ultimate decision-making body in every project, you say to the steering committee, ‘This is how we got to what we think is the best option for the project; this is what we think could go wrong; this is the potential value we could lose if we chose an alternative option. As a result of all of that we recommend that this is the way forward’.” (SBU1)</p>	<p>Understanding before choice</p>	<p>Option selection after understanding and integrating E&SE dimensions</p>	

<p>“As we go through that evaluation, then all the other issues I talked about will be considered and there will be a team of experts that will look into aspects of the project and understand what are the community and political issues in a particular country and are we comfortable that this is a stable political environment - given that it is going to be a multi-decade project.” (MRA3)</p>	<p>Understanding E&SE dimensions related to mining the context</p>	<p>Interaction between team members to understand how E&SE dimensions interact with respect to the project context</p>	<p>Cognitive dimensions of interaction</p>
<p>“Thinking through the options from a safety and sustainable development perspective... I think that that generally is starting to happen on most of our projects today.” (M6)</p>			
<p>“Initiatives like the SVA are forcing them to understand these issues - where they would otherwise choose not to.” (MR)</p>			
<p>“If you make a decision to say... ‘we are going to design this project in this way’ - understanding all the knock-on risks associated to that. And if you do, at least you know the risk that is built into that so that you can capitalise for that and build it into your operations cost. It is a contingency that you need to build in to say, ‘Well, by doing this we will manage this portion of the risk but it will increase another portion of the risk so we need to have a contingency for it or something along those lines’.” (ESD3)</p>			
<p>“Just because you have water today does not mean in 10 years time when water gets really scarce, that society might get water first and mining might be the last to get water in the future. So we are already thinking ‘how do we improve that; can we rather use wastewater or polluted water? It makes us, from a business point of view, more self sustained in our business going forward... So I think that whole long-term strategic thinking is different. It is about changing waste into products; using wastewater that no one else wants so there is no competition for it... Not just chasing permits.” (M8)</p>	<p>Planning with the future in mind enables the consideration of E&SE dimensions over different time frames</p>	<p>Process considers priorities of both economic and social-ecological dimensions</p>	<p>Dimensions of precedence</p>
<p>“We currently design a project with closure in mind. We are getting better at that... Certainly I think we are trying to improve a lot on planning and taking those things into account.” (M8)</p>			
<p>"SVA process is trying to [take] some kind of quantitative measure from our risk ranking and trying to put [qualitative issues] into a quantitative way into our projects so that we do try and look at it.” (ER)</p>	<p>Valuation includes qualitative and quantitative</p>	<p>Valuation demonstrates how E&SE dimensions are</p>	

<p>“It puts a monetary value to issues that were previously understood as purely qualitative and also demonstrating that sustainability is not a ‘nice-to-have’ but can actually serve a dual purpose of cost saving and a license to operate.” (PMAA)</p>	<p>dimensions</p>	<p>interrelated</p>	
<p>“Fundamentally I am a scientist and an engineer and I do tend to think like they do. But having seen the other side of the coin in the environmental and sustainability space, I know that if I can equate something into risk or money, I know I can get the attention of someone in risk or operations... If you can equate something to risk to the business - whether it be monetary or reputational risk - it really helps to get people to focus on it... I think it is just putting it into a language that people can understand and that is meaningful to them.” (SES)</p>	<p>Valuation creates a common language</p>		
<p>“It is very important, actually, to have an initial combined discussion with all members of the team, highlighting why the things should be done in an integrated manner. It makes life much easier... They have to within themselves, inherently believe that we are doing this for an important reason... and why it is so important for the business.” (SBU1)</p>	<p>Collective understanding of purpose</p>	<p>Collective and individual understanding of purpose and value of integration</p>	<p>Identity dimensions</p>
<p>“To change from one paradigm to another is hugely difficult and takes a long time. To do things like this, it has to be demonstrated that it can be successful.” (M3)</p>	<p>Process of gaining commitment</p>		
<p>“You still need to convince the people that need to go through the process to participate and engage.” (PMAA)</p>			
<p>“We took a project where decisions [were] not seen as a sustainability thing, but seen as part of a business process that people understood. That was very important in getting the buy-in for what was actually happening on the ground.” (MSD3)</p>	<p>Explain purpose in meaningful ways to individuals and like-minded individuals</p>		
<p>“I think I changed the name because of the generation gap that sustainability is something that is nice to have but does not really add value. So you need to frame it in a way that they can relate. So you show it to them from a different perspective, benchmarking it to their frame of reference.” (PMAA)</p>			
<p>“As soon as we started demonstrating real value, then acceptance started coming along pretty quickly.” (MSD3)</p>			

Appendix 9: Different perceptions of sustainability

Participant Voice	1st order concept	Aggregate Dimension
"Sustainable development is still looked at like something of a luxury on one side and from another point of view it is not necessary [viewed] as part of doing business." (PMAA)	Sustainable development is a non-core luxury	Resistance to Change (E&SE integration is a hindrance to extant processes)
"The older generation professionals don't believe sustainable development is something tangible." (PMAA)	Sustainability is not tangible	
"It is just seen as a 'schlep' by the project managers because they still - most of them - are very old school and they come from an environment where you do the trade-off study and you do the financial model and it is finished." (SBU1)	Additional sustainability requirements are a hindrance	
"It is a tick box exercise and that it is something additional to the work they have to do." (SBU1)	Compliance mindset to E&SE integration	
"If you have an old school guy who always did things a certain way, he will be very determined that that is the way it should be because that is what he knows." (SBU1)	Reliance on former methods	
"Age is a big thing. When they started working they did not need environmental authorisations. We hear classic stories of guys who took a mine plan to the chief inspector of mines' office and said 'I want to build a shaft'. He signs it off, they go back and they build it. That is the world that they came from." (SBU1)	Former experience of mine planning	
"The reality is that it is all about the numbers - from my perspective. The reason why it is all about the numbers is that the financial element in my opinion is a cornerstone of sustainability. Everybody, when they hear the word sustainability, they hear non-finance but actually finance is at the heart of sustainability. Because if it is not a sustainable mine for shareholders and management - in addition to communities, government and environmental lobby groups and whoever else, there just won't be economic growth and development which frankly is also not sustainable for the globe." (M6)	Economic sustainability is predominant in E&SE integration	Economic predominance (Social and environmental interests are acknowledged but economic interests are predominant in decision-making)
"You get others that say we have just got to mine coal - the world depends on it. We have managers like that - senior people who just want to get coal out of the ground - where others would be more aware that it may not be possible or it may not be the best solution." (PMBU1)	Output focused at expense of social-ecological aspects	
"So for an engineering guy it is quite easy. If there we want to mine, and there is a community there... well they must just move." (SBU1)	Output focused at expense of social-ecological aspects	

<p>“You do definitely get those guys that have it in their mind that this is the right thing to do but then on the flip side there are production pressures and economic pressures and it does then fall by the way side because if you don’t sort out those production issues first, you are not going to have money to do anything else.” (SES)</p>	<p>Output focused at expense of social-ecological aspects when under pressure</p>	
<p>“Often PMs are chasing the lowest capital cost. So we often don't necessarily go and explore.” (ER)</p>	<p>Economic predominance hinders search for alternatives</p>	
<p>“When it really comes down to it and they are choosing the place where they are going to put their money, they choose the project with the highest NPV. That is just reality. The project with the highest NPV may not be the best one from a sustainability point of view.” (ESD2)</p>	<p>Economic predominance in option selection</p>	
<p>"It is a tick box exercise and that it is something additional to the work they have to do." (SBU1)</p>	<p>Compliance mindset</p>	
<p>“It is just seen as a 'schlep' by the project managers because they still - most of them - are very old school and they come from an environment where you do the trade-off study and you do the financial model and it is finished.” (SBU1)</p>	<p>Additional sustainability requirements are a hindrance</p>	
<p>“Sustainable development is still looked at like something of a luxury on one side and from another point of view it is not necessary [viewed] as part of doing business.” (PMAA)</p>	<p>SD is a non-core luxury</p>	
<p>“I often think if I was GM I would struggle to get people to keep pushing to get production targets because I am so inherently aware of the sustainability issues. Unconsciously I would be focusing on those and I would have to consciously focus on making sure that production was being delivered. For a lot of our guys it is the other way around. They have been schooled and trained in terms of producing and managing cost. So they do that...” (SBU1)</p>	<p>Social and environmental focus in decision-making. Conscious effort is required to focus on integrating economic dimensions</p>	<p>Social-ecological predominance (Economic aspects are acknowledged but social and environmental priorities are predominant)</p>

Appendix 10: Historic and current identity

Theme	Participant Voice	1st order concept	2nd order concept	Aggregate Dimension
Historic identity	“Our communications team did a corporate identity piece of work at the end of 2009 very extensive, lots of interviews the character of Anglo - and I totally agree - it was solid, methodical, well respected, slightly old school... well respected, maybe a bit arrogant slightly eccentric oxford professor - a bit of an air of arrogance in a tweed jacket. I think that is fair...” (MSD9)	2009: solid, methodical, well respected, slightly old school, slightly arrogant and eccentric; oxford professor	Stable, hierarchical, well respected, risk averse, old school boys club	Stable, hierarchical, well respected, risk averse, old school boys club, technically excellent and an employer of choice
	“I think you also need to take the history of the company into account. We are an old, risk averse boys club type of company... But most of the people who come and work for Anglo - it is because it is a stable, more hierarchical organisation.” (SES)	Historically: old, risk averse boys club type of company, stable, more hierarchical organisation		
	“From the SA context Anglo was always a massive conglomerate that was always involved - a significant cornerstone of SA and of industry - which has been for a very long time. Employing 110 000 worldwide so they have a big impact. I have only worked for AA all my life and it was the company to come and work for. That impressed me. It was an honor and privilege to work for this company. It was technically very good and did substantial things.” (MSD7)	Historically: Employer of choice, technically good	Technically excellent employer of choice	
	“I think it was previously a really good mining company for technical people - whether that is the case now, I don't think so. I don't think it was always the case...” (MR)	Historic: Technical excellence		

Current Identity (many of these attributes appear to be enduring when compared to the historical identity)	<p>“We are slightly more bureaucratic and hierarchical. In general - I would describe us as a force for good inside South Africa.” (MRA2)</p>	Bureaucratic, hierarchical, a force for good in SA	Hierarchical, technical and ethical integrity, conservative, stubborn about doing the right thing, responsible, contributing positively to communities	Hierarchical, conservative principled in profit-making, responsible (doing the right thing), technical excellence, integrity, good employer, contributing to society
	<p>“A multi-national, diversified, mining company with strong roots and heritage in Southern Africa and a strong commitment to doing business in a responsible way; trying to make a positive contribution to the communities. We are quite a self-critical organisation. We quite enjoy ‘how would you do things better?’; we are quite conservative in lots of ways and quite stubborn in lots of ways. There is a way of doing things - it is the right way of doing things and we will do it that way. And even when we might be expedient... there is a technical and ethical integrity. Recently we pulled out of a high profile project... There are right and wrong answers to things.” (M2)</p>	AA identity is rooted in SA. Responsible business, trying to contribute positively to communities. Self critical, constant improvement, conservative and stubborn about doing things in the right way. Technical and ethical integrity		
	<p>“You know we are not a hard-nosed company at all. We are not ruthless and we are not totally, absolutely profit dominated. Obviously we are there to make a profit for the shareholders, but the way in which we do it is subject to quite a broad range of principles. And then I think there is another overlay - which is a particular technical overlay - in my community in the company - most of us are registered professional engineers in our own capacity. So you have a professional ethic in any case to do the right thing. And what you do find is that your own personal ethos then overlays on top of this to do the right thing.” (M9)</p>	Principled in making profit with professional ethic to do the right thing	Responsible company with high integrity, principled in profit making, excellence, implementation and doing the right thing	
	<p>“The characteristic in terms of - not what it actually does but what it is - is a corporation or conglomerate of high integrity.” (CAA3)</p>	Company with high integrity		

<p>"I would say that we have always been a responsible company. I would probably say that it stems from the Oppenheimers. It is only recently that they have not been involved. It is almost something that is engrained. I think Anglo is also: <i>If you are going to do it, do it the right way.</i>" (MRA4)</p>	<p>Responsible company, doing the right thing (rooted in Oppenheimer philosophy)</p>		
<p>"If we can't do it and do it well, then I think people will tell you that we should not be doing it." (MAA2)</p>	<p>Excellence</p>		
<p>"For me, with the growth that I've had with Anglo, I feel that Anglo is the best company to work for and I feel that... there are a lot of good intentions. It is just what spoils the cook is... how is that implemented and people may be spoiling that. But I feel that Anglo has best practices." (MHR)</p>	<p>Good employer with best practices but implementation is a challenge</p>		
<p>"To be completely frank, at the moment Anglo is a rather relatively fragmented organisation. It has different cultures in different countries in which it operates. I have been to enough operations and countries to know that sometimes the local perspective is very localised." (M9)</p>	<p>Fragmented company based on local perspectives</p>	<p>Fragmentation based on locality, business unit and functional silo's across the organisation (despite unification attempts)</p>	<p>Fragmented</p>
<p>"Anglo is very fragmented so each of the business units have their own identity and own culture. Anglo at the moment is a group of business units and I have worked in a number of these business units and in each one there is a different culture and a different way of doing things and a different way of conducting business. We are certainly closer to getting to a 'one Anglo' point of view and Anglo as a brand. It is moving [but] we still develop things in isolation." (ESD3)</p>	<p>Fragmented company - each business unit has own culture and identity - currently moving slowly to 'one Anglo' but developing in isolation</p>		
<p>"It is hard to pin down a company's identity..." (MRA2)</p>	<p>Identity ambiguity</p>		

	<p>“[Each business unit] has quite a unique identity within the Anglo stable because the culture in [that business unit] is different... All of our mines and all of our projects have their own identity within the AA identity... The feeling around a project and the identity and the vibe of a project is very much related to the PM. When those baby projects grow up into teenage mines, that identity will change because you will get a GM that sees things differently.” (SBU1)</p>	<p>Fragmented identity within AA based on individual business unit cultures and core mine/project leader perspectives</p>		
	<p>“I think Anglo is in a very mixed phase today. I don't know if it has a core identity. I think each business unit - even within each business unit, they sort of have an identity. But there is not enough of an identity. The corporate center has tried. They have tried from the branding perspective; they have tried from the Anglo values perspective to try and instill something that is core to the organisation. But there has not been universal buy-in. There are too many differences on all kinds of levels across all disciplines across all the various business units to say that there is a core identity to Anglo at the moment.” (SBU1)</p>	<p>No core identity despite several attempts from AA corporate; too diverse between business units and disciplinary silos</p>		

Appendix 11: Identity change

Theme	Participant Voice	1st order concept	2nd order concept	Aggregate Dimension
Identity Change	“I think that is what has changed over time. My 24 years is going back to the new SA. Things have changed enormously since then. We have just had to change with the times and I think we have.” (PMBU1)	AA changes with the times	AA changes with the times but the change process is slow	Slow change over time
	“Trying to change this company... happens very slowly because of our size.” (MRA2)	AA is slow to change		
	“When [the former CEO] came... she was the first non-inner circle, non-male, non-Anglo person to have that role. Again, it was mixed feelings when that came around but I think from a board point of view that was a very, very clear steer that we need to change. We cannot be this old boys club anymore. That has continued to change. Through [the former CEO] and bringing [the current CEO] in as well - non South African mining engineer - someone who knows that business and who can do it correctly but obviously look after shareholder value. There is no doubt... the two have to go hand in hand.” (MAA2)	The former CEO’s appointment was the beginning of a change from the old boys club	Leadership affects identity. Change from the old boys club started with appointment of a new CEO, who was a woman and who was not from the mining industry. She tried to unite AA's identity	Leadership initiate identity change
	“I think Anglo's whole identity has changed quite a lot under [the former CEO] and there was an Anglo identity that kind of moved under [the former CEO]. What she was trying to do under ‘ONE Anglo’ thing...was take all the disparate bits - and effectively Anglo was a whole lot of disparate bits - ... it is quite complicated to get that to be one single identity because we have all these shareholders in these companies.” (ER)	The previous CEO initiated a process of bringing the disparate parts of AA under a 'one Anglo' umbrella		

	<p>“It is a pretty broad company, pretty loosely connected. Under the previous executive, there were definitely moves to pull it together for sound business reasons. And I think the global industry has moved into a different space now from a capital point of view... so there is far more focus on operational performance than there has been. Because once you are not in a growth phase, you have to get your cost down, and your productivity up and your CAPEX has to be very cautious. So you have a different executive for the time. The top 20 mining houses, I think... changed CEO's in the last 1.5 years. New leadership for a new scenario. Some of these expansion people that just go for growth are not appropriate to lead these organisations.” (M9)</p>	<p>Change in the company and in the industry is initiated by new leadership</p>		
	<p>“I think that is also part of the problem with Anglo. When you talk about identity, we had potentially this identity with [the former CEO] - our identity is in the process of shifting. She had very much a go-agenda... whereas the agenda is shifting to efficiencies and getting our agendas to actually run as they are supposed to... with growth where it is actually justified... Because we have not really focused on that and we need to focus more on that - and because we have had a complete change of focus at the top of the organisation - so your whole dynamic actually changes. I think its personality and identity is probably going to change in the next four or five years. And if they decide after our new CEO to bring in someone else after him it will probably change more.” (ER)</p>	<p>New leadership affects identity and it is currently shifting with new leadership</p>		
	<p>“As you are aware from its history it has been a conglomerate of very separate fiefdoms - certainly during 70's, 80's and 90's and they had struggled to throw that off. [The former CEO] really was the one CEO who tried very hard to ‘one Anglo’ the place both in terms of systems, processes, thinking, brand and of course [the present CEO] has said that is absolutely what we do.” (M1)</p>	<p>The former CEO tried to 'one Anglo' the company and rid it from its fractured identity</p>		

	<p>“Change is happening fast for the good. The canteen: when I started working here there was still a left hand side where the main area was that had wooden floors and bare tables and chairs and on the other side there was a carpeted area with slightly nicer cushioned chairs. In the past you could only go and sit there if you had a certain job grade... and the general populace would sit in the general canteen and that, luckily, has changed... This company used to be a stodgy, hierarchical old boys club in the Oppenheimer's time. It is still very large and still very bureaucratic... you have to be when you employ a 10000 people but it is a thoroughly modern place to work in. That has been a very definite culture change from when I applied here as a bursar.” (MRA2)</p>	<p>Historic: Stodgy old boys club in Oppenheimer time (separate dining areas). Currently: Modern, bureaucratic</p>	<p>Company's identity transitioned from an historic old boys club, with separate dining areas based on hierarchy, who was responsible in relation to societal expectations and highly respected...</p>	<p>Transforming identity from old to new</p>
	<p>“We have gone through a dip. We started off being a responsible mining company and that has been our stated purpose all along but we then evolved into a hard and fast business and now we are trying to get back out of that trough... but very much still with that hard and fast business mindset.” (SES)</p>	<p>Cycle: Responsible; hard-and-fast business; responsible and hard-and-fast business</p>	<p>through a period of focusing on growth and taking advantage of the legal framework.</p>	
	<p>“Someone like Oppenheimer – that [care and respect] is what was truly important to him. Sure it was making money - but the care and respect... a lot of what the family and the business did back then during the early years of apartheid was anti-apartheid: providing services and developing communities for people who the Apartheid government were not providing services for. So, the organisation then in the 40's and 50's was very different because the leadership was very different. In subsequent years we've taken advantage of the legal framework and the fact that we had been given license to operate because it was bringing revenue into the country. It has become very much all business-driven where we started off as a family business wanting to do good and wanting to bring in people, grow and empower people... [We lost responsibility for a while]... and if you look at the legacy issues that we are trying to pick up the pieces from now</p>	<p>Oppenheimer legacy: Making money together with care and respect and responsibility followed by loss of responsibility as hard-and-fast business; took advantage of legal framework. Currently: Regaining</p>	<p>However, it failed to be responsible with regards to societal expectations - and caused harm and left legacy issues. It is currently transforming by regaining responsibility and respect, becoming more risk averse, modern,</p>	

	<p>... we lost it badly... A lot of the legacy mines are old collieries that are probably 30 - 40 years old and gold mines that are 40 - 50 years old. That was during a period where it was perfectly legal to sell on your operation to someone else - and sell on the responsibility to them and wash your hands and walk away - post-Oppenheimer time... [Today is different]. We are starting to have leadership engagement. The leadership that we have now... [believe] it is not the right thing to walk away from that. In a very broad sense... over the hundred or something years that we have been at play - we've gone through quite a drastic evolution trying to get back to what the organisation stood for." (SES)</p>	responsible identity	approachable, inclusive and relational	
	<p>"We are starting to see a lot of that production-driven type of person moving out of the company and we are becoming a softer, more risk averse company. That is also one of the things we are finding in the environmental space." (SES)</p>	Becoming a more risk-averse company		
	<p>"On the upside, I think we are seen as a far more modern organisation now our brand is far more moderns and our way of engaging is far more modern. Even if you look at our style guide... we use the first person. We used to use the passive third person. Now it is 'us' and 'we'... So think we have more of a personality now, more accessible... I think it is a younger face - still firmly grounded in some respectable position. It is not something frivolous possibly the same person - more progressive, more approachable, in jeans versus tweed." (MSD9)</p>	New identity: More modern, approachable, inclusive, relational, relaxed yet still respected		
	<p>"The company was set up in a massive silo organisation... and I would say S&SD started operating in a matrix way where we would say, 'well if this is a good way to do something in safety, we must do it across the business' - that was a big culture shock for people. Because people do not want to hear... 'But at the process operation next door they do this.' ... I will tell you I do not work there and I am not interested in what they are doing. So we had to create that identity. We had to do</p>	Sustainability compels change as it potentially works across formerly rigid silos	Sustainability is increasingly infiltrating the organisation's identity. Although it still oscillates attention between	Growing sustainable identity

	<p>some harsh things. We actually had to go and break down certain signs and images and logo's and all sorts of things to say no, when you come onto operation there is a certain brand, look and characteristics that makes us all part of one family and we support one another.” (MSBU)</p>		<p>financial and non-financial, based on the crises at the time, managers are starting to</p>	
	<p>“I think there is a bigger focus on sustainability. I think it is definitely playing a bigger role in the decisions that people make. I think it is very early days. So whether you can say... S&SD is the conscious of the business so I do think it gets a stronger focus but I think sometimes people take it out of proportion. There should be a balance between production, sustainability, people management... There should be a balance. One should not be seen as more important than the other. When things are going smooth then everything is fine. When there is chaos... people push production and they will forget about sustainability. All of a sudden we have an accident then all of a sudden safety is the focus. I think we struggle to keep that balance. We will have ups and downs but I think our ups and downs are quite extreme... but I think it is better than what it was 10 years ago... There are good things that are happening. People are making the right noises.” (ESD)</p>	<p>Sustainability is increasingly infiltrating the org but it swings focus between financial and non-financial objectives based on crises</p>	<p>own a ‘sustainable’ identity, and as they own it and see themselves as sustainable, they act as such. Significant progress has been made but the true test remains how integrated the organisation's actions are. To this end, sustainability</p>	
	<p>“Yes we are a mining company... but I think we are really trying to think about the role we play in all our jurisdictions and what we as miners can bring to those jurisdictions... is becoming quite a recognised objective amongst anybody at Anglo.” (MSM1)</p>	<p>Contributing to the jurisdictions where we operate is becoming a recognised objective</p>	<p>compels change, as it is able to work across silos. The organisation's sustainable</p>	

	<p>“Sometimes I have presented - even internally - and someone would stick their hand up and say: is there official evidence on climate change? I could easily try and refer to IPCC. Nowadays I just say to them - especially if it is an internal person: This is AA. This is what we believe is AA - where it starts and ends. It is as simple as that.” (MSD5)</p>	<p>Managers are starting to 'own' and declare aspects of AA's 'sustainable' identity</p>	<p>identity has been evidenced through it pulling out of unsustainable projects at huge cost.</p>		
	<p>“I can proudly say that we have made huge in-roads in the last couple of years - maybe because we had such a bad base - there was so little in place before 2005... I suppose the ultimate test will not just lie in the numbers but will lie in the organisational culture and the values of the organisation will lie in 'do we have this kind of integrated way of doing things'... where not everything has to be driven by telling people 'do this and do that' and so on. It will just be a way of doing things. And we have seen that those who we believe to be ahead of us in this game are like that. They do many things unknowingly because that is how we have been brought up in this organisation - we do things a certain way - people from the outside looking in - say wow, we are impressed by what we have seen - but for them it has become a way of life - a way of doing things. Now we are not there yet - that is where we want to be - therefore we need structure and process and parameters and measurement and all those kind of things to help us along this journey. But we still believe that is where we will end up... is where it will just become a way of doing things.” (MSBU)</p>	<p>Significant progress has been made compared to the base case, but ultimate success is when there is an integrated way of doing things... and it comes naturally</p>			
	<p>“As the sustainability function has matured, it has seen itself as being absolutely core to the business process itself. Once we saw ourselves as being that, we started acting in that way and all of a sudden you were not making a business case, you were making a value case or a risk avoidance case - one or the other...” (M1)</p>	<p>As organisational members started seeing the organisation as sustainable, they started acting that way</p>			

	<p>“Examples of projects that we just gave up where we sacrificed hundreds of millions of dollars... Why? Because there are certain community issues. And when I say issues I mean we will not do what hypothetically I heard China done before - just move one million people or 1000 people without necessarily proper consultation and the like. If you have to go through proper consultation and put in place the right systems, structure and processes, then it becomes value-destructive to the world as a whole and the company. Why would we then do it? The only reason you would do a mining project is if it adds value to the shareholders, to the community, to the country and to the world. If it does not add value to all stakeholders, why would you ever do it?” (M7)</p>	<p>AA pulled out of projects due to its sustainability agenda</p>		
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Appendix 12: Quotes about being a *responsible* company

Theme	Participant Voice	1 st order concept	2 nd order concept
Responsible	“I feel that we are a responsible company. We take ownership.” (MHR)	Responsible company	Responsible company, creating value and wealth through safe, as well as socially and environmentally sustainable ways
	“I definitely do [think AA is responsible]. In thinking about the operations that I have seen around the world, you have structurally all the elements. The leadership speak and talk. It is everything from our top CEO to what happens on the ground. It is visible. The people are locked into it.” (MSD7)	Responsible company from CEO to coal face	
	“I think Anglo, in my opinion, wants to be a responsible company. You get all these fly by nights that make a lot of money for themselves but in the long term it is not a good thing. Anglo is not like that. They want to make a lot of money, of course, but they also want to do it responsibly... I think Anglo has always been wanting to do things properly. I don't think it is more so now - we have better procedures to get there but it has always been on the forefront. That is my perception of the company.” (PMBU1)	Responsible and financially successful company	
	“If you were to land from Mars and ask me who we are as Anglo, I would start by saying we are the largest mining company in SA... and the second or third largest company in SA; that we are approaching 100 years of age and we have been around for almost a century. And then I would probably go on to describe what it is that we mine and perhaps where. Then I would probably get into descriptors of the way we go about what we do... that because of our size we are able to have a positive impact on society over and above just the tax we contribute to the fiscus. I would describe that our public profile compels us to act responsibly.” (MRA2)	Largest mining company in SA. 100 years old. Public profile compels AA to act responsibly	
	“I would describe that our public profile compels us to act responsibly.” (MRA2)	Compelled to act responsibly due to public profile	

<p>“From a responsibility point of view, Anglo is responsible for looking after the environment while we are operating and it also includes the social environment... creating wealth for the people but in a sustainable manner.” (M8)</p>	<p>Socially and environmentally responsible while creating wealth in a sustainable way</p>	<p>Socially and environmentally responsible while creating wealth/value</p>
<p>“Sustainability is unavoidable in decisions in Anglo.” (MR)</p>	<p>Sustainability is non-negotiable in AA decisions</p>	
<p>“Because the potential for harm is so great, I think the company has a huge responsibility to make sure that it manages its impacts on communities in terms of real impacts on the potential to contaminate water, potential to impact rivers and soil. All the environmental impacts. Any company, including mining, has real potential to impact cultural issues - change ways in which communities and people live. Mining and minerals for whatever reason - you have indigenous people, rural people, communities who have had other ways of life. The company has a huge responsibility to preserve, protect, not harm... and then create value - a developmental agenda and responsibility.” (EAA)</p>	<p>AA is a company with huge potential to harm and impact. Thus it has a responsibility to preserve and protect, not harm... and then create value - a developmental agenda and responsibility</p>	

Appendix 13: Identity ambiguity

Theme	Participant Voice	1st order concept	2nd order concept	Aggregate Dimension	Theoretical Concept
Identity Ambiguity	<p>"I don't think what our branding says we are is what we are. So investor... employer of choice - all of the soft cushy words that are being used. I don't think we can prove that that is who we are. Ideally it should be, but I think we are very, very far from that... It is a good company. I am not saying it is a bad company. I am just saying that I can't associate the words that we are putting out there with what is really happening... I still say it is just a mining company. It is just another mining company. And what do mining companies do? They take ore out of the ground, we process it and we make money." (ESD)</p>	<p>Ambiguity. Disassociation with strapline. Just a good mining company making money</p>	<p>Inconsistency between organisational messages and member understandings of organisation's identity</p>	<p>Ambiguity in current messages and measurement</p>	<p>Identity discrepancies</p>
	<p>"I am not sure about the way we go about trying to do that. We... come up with 'real mining, real people, real difference'. It does not actually tell me what we are all about. It is just bin. It is a nice tag line for the public... but do I make a connection with that regarding what we are all about? Not quite. I am sure most employees struggle with it." (M3)</p>	<p>Not identifying with tag line</p>			

	<p>“If you look at the HIV epidemic - this business of taking labour from remote communities. What is going to happen if you put migrant labour in a huge hostel for nine months? There is going to be a huge sex trade going on and that is exactly what happened. You know a lot of mines created the conditions that were conducive to the further spread of AIDS. And then having got AIDS here, they took it back home... As an employer you do not want to admit to all of this. You want to say no, you got it all wrong... Going forwards, how can we be sure that we are not creating a situation where we are being called to account as a business, or harm that we have done through our business operation.” (MAA1)</p>	<p>Difficult to reconcile harm from legacy issues with responsible identity</p>	<p>Inconsistency between legacy issues and responsible identity</p>	<p>Retrospective consequences of current action</p>	
	<p>“Back in 1975, AA was a South African company, based in SA, only centred in the country, a lot smaller than it is currently. But it was a lot more South African company and you felt a lot closer to AA because it was an SA company. We were... a subsidiary of AA but we associated ourselves a lot more with AA, I would have said then. That is how it continued to the early 2000’s when AA relocated its HQ to London. It became a truly multi-national, international company. I think there was a bit of a disconnect. Obviously we stayed here but that was now a company that looked after interests across many geographic zones.” (M5)</p>	<p>Historically, members identified with AA as an SA company. The move to London initiated a disconnect as the company took on a multi-national agenda</p>	<p>Loss of South African-specific identity - SA is often perceived as a liability - as a result of internationalisation</p>	<p>Loss of South African identity</p>	<p>Loss of identity attributes</p>

	<p>“Anglo is the story of two halves. An identity... we created a split identity when we listed in the UK... Half of our identity is a South African champion of mining and essentially access to modern industry. We are probably... the only mining company that has a significant presence in SA - listed in the UK. Most other mining companies - Rio, BHP - of our size do not have meaningful presence in SA. I think about 40 - 50% of our cash generated comes out of SA. I think that is one part of our identity - it is a historic, Anglo, SA champion. And it is about economic growth in SA. That to me is an identity for Anglo in SA. The other half of our split personality is the London based view of the world - which is we are a global mining company; which is we want to grow our organisation into as diverse and profitable animal as we could possible do, but we do not like the legacy that SA comes with. We don't like the deep level mining; we don't like the fact that SA government seems to think that they have a hold over us and can question our decision-making and limit and impair our flexibility; to avoid making profits for shareholders but rather protecting voters; jobs and the like. So I think the identity in PLC is more about growing a global mining company and quite often they forget about the SA company.” (M6)</p>	<p>Split identity - historic: South African champion (economic growth). Current: Growing a global mining company - for which the SA development agenda and corporate challenges and expectations - is a potential liability</p>			
	<p>“I think it is our internationalisation. We have lost focus on the local stuff. [My] SA perspective... Government hates us to bits because we no longer seem to be South African, which is not a valid reason at all. But for us right now... there is no clear identity of who we are and what we are about. We need to do a lot of work.” (M3)</p>	<p>Identity ambiguity following internationalisation - lost focus on the local</p>			

	<p>"I think some of our credibility has been lost [since then] because... we have not delivered on a few projects - big ones - and we have lost investor confidence and I am not sure if they would see us as solid as they used to. Our mining skills were beyond doubt and our project management skills used to be beyond doubt and they are still excellent. Just because one particular project is a bugger up does not mean that everyone else is useless. But I do think that we have lost some of that credibility." (MSD9)</p>	<p>Loss of credibility and investor confidence due to failed projects. Yet, remain technically excellent</p>			
	<p>"The previous Anglo was SA centric. Something might have come in there. You know I don't feel close to London as I used to feel to Johannesburg HQ. In the previous Anglo SA-based set-up or regime... there was always this...well, Harry Oppenheimer - although he was not the boss at the end, he was certainly always associated with Anglo. Everybody knows who Harry Oppenheimer was and that sort of epitomised AA when it was an SA company. I don't know who epitomises it. I think there has been a loss of identity referent - or rather cohesion between ourselves and what it used to be." (M5)</p>	<p>Oppenheimer personified the SA identity of AA. Loss of former identity referent but no cohesion/new referent between former and current identity.</p>	<p>Loss of Oppenheimer/SA identity referent</p>	<p>Loss of identity referents post Oppenheimer and following internationalisation</p>	
	<p>"It is a difficult one - because obviously when we were local, obviously the Oppenheims' developed the company to start with... but we went international and we went all over the place. But I think there is one bit missing and that is that the identity that one can relate to... in terms of what the values of the companies are is kind of missing." (M4)</p>	<p>Historic: Oppenheimer was the identity referent for values. Currently: Lack identity referent for company values</p>			

	<p>"I mean prior to going to London AA was basically an SA run, managed and bordered company. Not so now. There is nobody... there are very few, rather, remaining South Africans on the AA board. They are multi-nationals making up that number. I think there has also been a bit of loss of attachment there. We knew who our SA directors were. They were a lot more tangible and known to us... Now they are just names in London. Plus, I think some sort of degree of separation might also have incurred in that the directors in London [are] no longer perceived to be - I talk entirely for myself here - Anglo was always known as a mining company with people who understood mining largely on the board there - There were persons from other industries... who knew the business of Anglo in its essence as being a large mining conglomerate. We had an industrial arm added on - the non-mining assets. Those have since been sold on and now we are a minerals organisation. But the people who managed us are not always from that background and we feel sometimes... I feel sometimes that the people at the top are not quite in touch with mining. They are running this as a business - which you should... and we sometimes make reference to the perception that they don't quite know what a mine looks like. They sit in their ivory towers in London and their backgrounds are not mining-related. To our view, mining is very specific and its own type of industry. I presume the guys in the ice cream trade probably feel the same. If you had to bring a CEO from a mining company in to run a large ice cream conglomerate... 'What does he know about ice cream'? We sometimes refer to... not despairingly... but those guys in the ice cream factory up there... they are making decisions that affect</p>	<p>Diversified skills and background of new board create identity ambiguity for individuals who are strongly identified with AA's mining identity</p>	<p>Loss of identification with board as miners</p>		
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	<p>mines based on what they see written on paper - not actually being down in the face of what it takes to run a mine. Without that exposure I think you could be lacking the attachment, the insight... It is probably a subconscious realisation that the guys who are now running the show are not... maybe not as well... I don't want to use 'trusted' because obviously they are there because they are skilled and competent persons but maybe I don't see them in the same light, had they been a board full of miners. Maybe that would sort of epitomise what my... it is not something that bothers me too much but when funny things happen it is one of the things that you can use to rant about... 'you know these guys that know nothing about mining... what are they deciding and what do they know?' It could subconsciously have an effect?" (M5)</p>				
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Appendix 14: Responsibility ambiguity

Theme	Participant Voice	1st order concept	2nd order concept	Aggregate Dimension	Theoretical Concept
Responsibility Ambiguity	<p>“In many ways, SA’s legislation is forcing companies to take on what would traditionally be governments role. I see the authorities playing straight into that. It is almost taking the responsibility away from them. It is complicated what is happening on the ground... Local government needs to be better regulated [and] they need better mechanisms in place where they get held to account for partnering effectively with companies, delivering on their objectives. As long as they are not, the likes of Anglo are being forced to step into that gap, and the minute they step into that gap... it takes the responsibility away... There definitely needs to be a real challenge around who takes responsibility for what... At the moment, unfortunately, the legislation... the social labor plan assumes a partnership approach but I have just not seen one where it works well. I have never been to a mine where they have said, ‘you know what, this is what we are doing with the local municipality and it is working well’. I have just never heard those stories. And maybe I just go to dire mines - when I say dire I mean overstretched community relations personnel; hopeless local government... and enormous stakeholder pressure and expectations... And basically local operations realising they are going to get nothing out of government so they just fly solo.” (CAA4)</p>	<p>Ambiguity about content of responsibility vis-à-vis gaps in government capacity and regulatory framework. Partnership approach not working well</p>	<p>Ambiguity re what company is responsible for due to gaps in government regulation and capacity</p>	<p>Ambiguity re what company is responsible for</p>	<p>Responsibility ambiguity</p>

	<p>“We sometimes land up playing a role that is dangerous for us to play... we start becoming the provider of social services to some places and I think we need to be very careful of doing that because I think it gets us into trouble. That is a role that we are not quite sure what it means for us yet. The provision of those types of things to the people in the areas that we work is so bad that we think we have an obligation to try and sort it out. But I think we need to be very careful about how we do that. We are only there for a defined period of time. I don't like the idea of providing from mining, things that cannot be provided afterwards. That is a very long and tough conversation and I don't think we have got that sorted out in our heads.” (MSM1)</p>	<p>Ambiguity about providing social services. Feel responsible to improve conditions in community where operations take place but can't provide such services sustainably. Whose responsibility is it?</p>			
	<p>“The more you give the more people expect of you. The more they expect of you in a way it becomes an incentive to always have you doing everything you can to keep them happy, which is also not a healthy state of affairs...” (CAA4)</p>	<p>Ambiguity regarding how much to give - creating dependencies and expectations of continuous support</p>			

	<p>[A particular AA mine was reaching closure.] “We realised that after a couple of years, Anglo and the mine were finally going to hand over this township (the relocated settlement) to the municipality and that the municipality would start taking over the running of the town. What we started realising is that one of the reasons why the relationship between the community and Anglo was getting so fractious, was that it was not in the community’s interest to declare that Anglo’s job had been done because they knew that for them to say to Anglo, ‘you have done as much as you can be expected to’ - for them to have declared that, the municipality, who they knew did not have the capacity to effectively manage the town [would take over]. In a way they knew that they lost their only leverage point for keeping Anglo invested. It is complicated.” (CAA4)</p>	<p>Creating unsustainable dependencies due to government incapacity that fractures relationships</p>			
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	<p>“I think the first port of call for stakeholders is the company, where it should actually be the government to say you are permitting this thing. You are allowing it to go ahead. Are you aware of the following: Environmental impacts, social impacts... Have you only allowed this to go ahead when those have been offset appropriately - either by the company or by the company and the government together? To expect the company to take on board all stakeholder issues is unfair because each company is going to act differently but it is for government to regulate that. This is the minimum that mining companies must do and this is what government will do in addition to make it fair and reasonable. Of course there will be environmental impact and to ensure that the environment as a whole does not suffer. You know an asset of the country is maintained. Well ultimately it is the government’s [responsibility] because they are the ones that legislate what activities can be done. I would say in some situations they should not even give prospecting permits. They should not even allow people to go and look for minerals there.” (MR)</p>	<p>Ambiguity re responsibility due to government incapacity and gaps in regulatory framework</p>			
	<p>“There are certain things in the socio-economic area that should be dealt with by the government. That is their charge. And there are certain things that we can do that should not create dependence.” (SES)</p>	<p>Company responsibility should not include creating dependence... government should be responsible for that</p>			
	<p>“We are a business. We have to make money. A lot of the socioeconomic things that we do for the community - buildings, schools, fixing roads - that is not our jobs and they should be providing it for the public. Our job is that</p>	<p>Responsibility ambiguity. Company responsible for sustainable</p>	<p>Ambiguity re responsibility: avoiding harm or pro-active</p>		

	<p>we don't screw up the environment that the community relies on. We make sure that their water sources remain unpolluted, that they still have access to fertile land, that rehabilitated to a sufficient standard that they can still feed their families; that they have got jobs to come to and that if we do embark on creating jobs and entrepreneurship, that it is sustainable so that when that mine leaves, that community is not put to pieces... because all those jobs are dependent on a mine." (SES)</p>	<p>development that creates no harm long term (preventative). However, government incapacity creates community expectation and dependencies that company should not engage with.</p>	<p>development</p>		
	<p>"I think quite honestly the answer is that you can always do more. I think the issue is that the need within the various counties from a social point of view is so high. In a lot of cases the government have not actually lived up to their responsibilities. But the burden on companies now is ever increasing. The aspirations and expectations from communities is sometimes out of proportion to what a company can actually physically do... I would hesitate to say that we are not doing enough as a blanket statement - but what I would say is there is always need to do more. And so the real balance now is to balance what you are actually doing for the communities and what you can afford to do. So, because it makes absolutely no sense to plough a huge amount into the sustainability agenda and cripple your company - both ends are loose-loose. That is a challenge and how they cope with that I don't know." (CAA3)</p>	<p>Responsibility ambiguity. Tensions between sustainable development (uplifting communities and creating sustainable livelihoods) and limited resources</p>			

	<p>“We have a very poor legacy and unfortunately that means that we just continue to regulate - but I just don't think it is sustainable. It just cannot continue to be sustainable. Somebody breaks the rules and does something that is not OK. So, what is our view? Do we discipline them and impose consequences? No. We introduce another rule. So here is the rule of CSR - we will make rules because one or two people ran off with our money and did a bad thing. Instead of calling them into account, we have imposed rules on all the people that actually don't need the rules... they are doing a great job. We will rather regulate than impose consequence - because it is easier. But consequence also implies responsibility. And responsibility is very different to compliance. And if we don't promote responsibility, we can't keep people to account. But if you impose consequence, rather than rules, then it goes back to responsibility. And it takes a lot of guts to do that.” (M3)</p>	<p>Erosion of responsible identity through compliance and increased regulation, rather than keeping people accountable and disciplining incorrect behavior</p>	<p>Tension between responsibility identity and lack of accountability (eroding responsibility)</p>	<p>Erosion of responsibility</p>	
	<p>“Since 2007 when I joined Anglo, there really was not an emphasis on individuals taking responsibility for their own actions and I think that is something that we have tried to introduce and making them aware of what the implications are of not thinking about safety and everything that they do. We certainly have gone down a communications and awareness route - whether that has changed... I could not say to you that it has yet changed the way that people operate and in an organisation of 100000 people that might be too ambitious anyway.” (MRA3)</p>	<p>Erosion of responsibility due to lack of accountability. Currently changing by encouraging integrated thinking regarding safety</p>			

	<p>“What is lacking - and hopefully that will now be corrected, is the whole thing about accountability and responsibility. So if you have the right accountability and it is clear, then it speaks for a change. If you put a KPI for each GM to say that he must manage his environmental liabilities and for one, it must not increase, and two, you are looking at a 5% reduction in liabilities... year on year - then suddenly it will be different. If I said to the mining guy...or the waste guy who is managing the waste rock on the mine. The waste guy is not just about moving tons but also responsible for moving tons but also responsible for the closure liabilities associated with the waste rock. Then he will think twice about where he is going to put that waste rock. If it is just tons... he is going to move with a short as possible distance, as quickly as possible... because he is measured on tons. But if he knows that he will have to re-load it for closure and reshape it... it will cost him money... Once you have your integrated planning and your KPI's are aligned... We probably have to do a lot of skilling on site... Empower people and a lot of knowledge transfer... and that all seems like that is the way we are going to go... about making sure that the guy on the ground has the knowledge and support he needs to do it responsibly.” (M8)</p>	<p>Responsibility: Integrate and align responsibility and accountability on a granular level with appropriate incentives</p>			
	<p>“In my view Anglo is a very soft company... My impression of AA... is quite a gentle company. I think anyone who tells you differently has not worked for any other mining company or other extractive industry companies... and I mean particularly guys... I often hear guys’ comments on how Anglo is but then you hear that they have worked here for 30 years and they have never</p>	<p>AA is a soft and gentle company compared to its competitors with regards to keeping people accountable. That is changing</p>			

	<p>had exposure to how other companies are organised. Anglo is a softer company –very, very gentle company... The world has come to a place where the softness is not benefitting the company in a way that is helping the company develop. It is becoming far more direct and instructive and holding guys to account. It was always very soft and it is becoming far more formal in how it deals with issues that it deals with..." (MSM1)</p>				
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Appendix 15: Inherent and continuous paradoxical tension in ‘responsible’ identity labels

Inherent and continuous paradoxical tension in the labels associated with normative responsibility resulting in a constant state of identity ambiguity as a result of the tension between perceived reality and aspirational identity

Explanations are read from both sides of the table and converge upon an overarching theme in the middle of the table

Perceptions about normative <i>responsible</i> aspirations		Responsibility Label	Perceptions about normative <i>responsible</i> reality	
Participant Voice	1st order concept	Aggregate Dimension	1st order concept	Participant Voice
“Fatalities cannot be tolerated. Incidents cannot be tolerated. We aim for zero harm approach. So no incidence... I think that is the right aspiration to have.” (ESD3)	Zero Harm is non-negotiable	Zero Harm is simultaneously non-negotiable and impossible	Zero harm seems impossible	“This is the problem. The mining industry has never been able to guarantee no impact. So just as we cannot say that if you come down a mine today you will come out alive.” (MRA1)
“I remember [our CEO] once saying that if we can't mine this in a way that does not harm the environment, then we won't mine it.” (MAA1)				“People would say that it is just not possible to operate without hurting people...” (CAA3)
“There was this really big drive starting in the mid 2000’s (2005 - 2007) where the concept of Zero Harm became more publicized. People - society in general - were not accepting that the mining industry kills so many people every year...” (MRA1)				“I am not sure if we can ever talk about zero harm - but we can talk about... as low as reasonably possible in terms of any kind of damage or whatever - and to a level which is tolerable. It is not perfect but it is as good as you can get.” (MAA1)
“Zero harm seems to be the international flavor – everybody uses that now. It is an aspirational thing and... The mindset is now that we have got to aim for zero and keep pushing that as a mindset.” (CAA3)				“What we sometimes find on a site level - if we say that we drive zero harm and there is now an injury, the work force would say, how is this possible? How can we say zero harm but we still kill or injure people? So there is a disconnect sometimes in terms of understanding that it is a target.” (ESD3)

Participant Voice	1st order concept	Aggregate Dimension	1st order concept	Participant Voice
<p>“The new situation is different in that we are working very hard to understand risks that our workers might be exposed to - [as opposed to theoretically the 60's and 70's when there was an almost blissful ignorance of what the operations are and what people are exposed to]. We certainly are not willfully exposing our guys to any form of danger that we know about, and are not doing anything about. We have been trying very hard to understand what is a bedevilingly difficult technical problem of trying to measure and control the levels of dust in our operation. We are very diligent to issue our guys with what we believe is the best possible personal protective gear and we train them to use it.” (MRA2)</p>	<p>The company makes significant investment in pro-actively ensuring employee health</p>	<p>Employee health is simultaneously being addressed and aggravated</p>	<p>Employee health has become so complex that company efforts are insufficient to deal with the problems</p>	<p>“The reason I say we still have an issue is because we have a very high unfortunate prevalence of lung diseases in our operations, principally to do with TB. It is associated and aggravated by HIV Aids - of which we do have issues in our operations. We are seeing the rise of drug resistant TB, which is contributed to by the difficulty in getting these uneducated guys to complete courses of treatment because they are so mobile and that kind of thing. Then of course TB is aggravated very much by the kind of dusty, wet, humid conditions that are found in our underground mines.” (MRA2)</p>

<p>“When we decided to provide HIV drugs without knowing all the numbers, we had this massive debate. And I was in that debate. All the counter arguments were being made and we were just seeing the epidemic and we were seeing the numbers being potentially massive. ARV's were quite expensive at the time and we did not foresee a reduction in cost - so it looked like one hell of a problem. And at the end of it, the CEO cut right through it... and to his eternal credit... he said, 'Do we look after our employees?' We said, 'yes'. He said, 'That is one of our values...' and our employees are ill and they are not getting the stuff from our government, is that right?' And they said, 'Ja'. And he said, 'what are we talking about? Do it.' Now those are the times when the values, I believe, kick in... The decision was about money... but it was about much more too. When Anglo first started talking about providing anti-AIDS drugs, a year's medicine cost twice the annual salary of a miner.” (M1)</p>				<p>“[Current lung disease in operations] is just a much more difficult beast to try and deal with. Theoretically in the past we had healthy workers that became sick in our operations. In the new environment we tend to find them sick from somewhere else and we bring them into the operations and we have to manage the effects of what we get. Sometimes they pick up TB from their fellow workers... but ... you might have picked up TB from the guy who was sitting next to [you] in the shebeen in town - but you can't tell. They bring it into the operations but we need to try and not aggravate it, and try to prevent it from spreading to their colleagues... It is a much more complex and a much more bedeviling problem. It is one that we are aware of and we are working very hard to manage.” (MRA2)</p>
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Participant Voice	1st order concept	Aggregate Dimension	1st order concept	Participant Voice
<p>“In 2005, I think, we made a fundamental decision to say first safety... as an absolute business imperative and that has had a massive impact on our business both directly and indirectly. For us to be sustainable and competitive in what we are doing, we need this. Subsequently we have a significant department who now is tasked with making sure that this is integrated into the business...” (MSBU)</p>	<p>Safety is a non-negotiable business imperative</p>	<p>Safety is simultaneously non-negotiable and compromised</p>	<p>Safety is compromised by production pressure</p>	<p>“Safety has always been non-negotiable... It is an aspiration that we would have zero fatalities... That mindset and language is absolutely non-negotiable... On the ground we would then have this concept of how much pressure they are under. So, if they are under significant amount of production pressure if you like, that might be a mindset that would then be compromised.” (CAA3)</p>
<p>“Safety... is given top priority and anything that is classified as unsafe becomes a fatal flaw and is re-engineered... as far as that impact and probability the bar is very high. We all know that if you do something there is chance of an impact... Without a doubt, safety is brought into every level in this organisation’s decision-making.” (MR)</p>				<p>“Whilst people know that it is the company culture that - if it is too risky to work you have the right to leave that area... If a supervisor is under pressure and he has got guys underneath him and he said, ‘do this, this and this... and if one of his work team said we are not doing this – [he might fear for his job].” (CAA3)</p>

Participant Voice	1st order concept	Aggregate Dimension	1st order concept	Participant Voice
<p>"[Our vision for communities is] to have a lasting, positive, net impact." (M2)</p>	<p>Intensions and actions appear responsible</p>	<p>Community upliftment is simultaneously positive and unsatisfactory</p>	<p>Actions appear irresponsible</p>	<p>"Mining is reasonably profitable, provided that you have all the infrastructure. [However], when you have to fund all the infrastructure, it is marginal and it becomes very, very difficult... So the communities are the net benefactors for that infrastructure... but they do not [always] see industrialisation and job opportunities and that type of wealth creation as being desirable." (M9)</p>
<p>"...It is trying to think what are the concerns of stakeholders and how do you address those pro-actively rather than reactively... We are reasonably well placed to be able to meet many of those... they remain challenging." (M2)</p>				<p>"What we tend to do is go into a community thinking that we need to create jobs and wealth for them. I honestly don't think that is the right approach. You really need to tailor the approach to what that community is. Just because we are coming from the first world developed countries and think we know what is best for them... They might not want to become urbanised; they might not want to expand their subsistence lifestyle to massive farming operations. It might not be truly what they want. I don't think we have found a way that we can engage to really touch on what they need. I think it is about what we think they need." (SES)</p>
<p>"What we are finding is that with all our projects and operations... the acceptance by the immediate local community... is vital... So... there has been increasing engagement because governments' all over the world have embraced 'resource nationalism'... they are having to satisfy</p>	<p>Engagement efforts seek to establish community needs</p>		<p>Authoritative community voices are not representative</p>	<p>"We often will engage with the chief (in SA context) and what the chief inevitably wants is more land and more money. He is not necessarily taking the needs or the feelings of the community into consideration. Every person in the community is not necessarily having his or</p>

<p>the social demands of the communities. So we are having to... it is being pulled as much as pushed from our side that you interact with the community and hear out what concessions they are prepared to make and on what basis they would make those concessions... What they want as a form of compensation. Because it is about compensation, really." (M9)</p>				<p>her voice heard. It is more the voice of the leader who may have a very different opinion. If you are going to go in, you've got to engage with everybody. Then I suppose it is also a function of society that in those patriarchal societies there are protocols you have to follow - you can't just go in." (SES)</p>
<p>"Before you turn around and say we are going to dig a hole in the ground you have to have community support, you have got to be so careful that you protect that environment that you operate in and how do you bring better social upliftment to the people so that when you leave, you are not just leaving a community behind that was reliant solely on that mine for its existence. You have got to put other things in place so that when you do leave, things don't break down. I think that is business of today now. For a company today without thinking of those ramifications is pretty short term - even if they got permitting through." (MAA2)</p>	<p>Investment and planning considers the community after closure</p>		<p>Upliftment investments fail to deliver positive outcomes</p>	<p>"Do we truly uplift the greater communities in which we operate or do we just enrich the communities that are closest to the mine... You pay people housing allowance, but we know what they do is they take that money and spend as little as possible on informal housing... So we knowingly allow people to live in informal settlements... and then we expect them to come to work, be fully rested, fed correctly and then do a very tough eight hour shift. If we know that they are not doing that then we have a moral obligation to fix that and change that. So how do you begin to do that? Again we do not have the answers yet but I know that quite a number of the BU's that have a challenge around that are looking at it at the moment." (MAA2)</p>

Participant Voice	1st order concept	Aggregate Dimension	1st order concept	Participant Voice
<p>“We achieved 50% of what we thought we could achieve by 2020, by 2012. So it was fantastic... We are seeing new technology of how we manage water - those technologies are now being driven into the business, which is what we wanted to see... We have got standards for the group and as part of the governance for the standards we are trying to keep track on how well they have been implemented...” (MSD1)</p>	<p>The company is making significant progress in understanding and managing water issues</p>	<p>Water as an imperative environmental dimension is better understood and managed, and simultaneously less well understood and potentially still being polluted</p>	<p>Current decisions and measurement scales might lead to unsatisfactory or irresponsible outcomes in the future</p>	<p>“When you talk about expectations long term and short term... What is water neutrality today? Will we have farms that will be able to graze for the next 100 years, where mines arrived and left in time? What is that expectation? Is that still cattle and is that achievable or not? Then you have got to look at it in a different sense and say that people's expectations change and there might be trade-offs... We might be able to produce more water... of a lower quality... but we actually can't have grazing... they will have to go to a more robust crop... We are still grappling with this because... society's expectations are not a framework that is fixed.” (MSD1)</p>
<p>“We are starting to understand the value of water - or at least the true cost of water for our businesses... what it is actually costing to get to point of use; the back end stuff is starting to come through. What are the discharge charges and implications of having that water, using it and then discharging it? That is still to come. Then ultimately value that is even a bigger concept. We have done some work on that as part of our technology strategy. So there has been movement. We have got engagement strategies...” (MSD1)</p>				<p>“It is today very well known that coal miners in the past have quite often opened up seams in the Witbank area - disturbed or created a scenario where there is excess water that surfaces - that needs to be pumped and treated etc.... I think the challenge that we face, as a group is the decision to open up another mine in that area - or in any area. Can we, with a level of certainty say that it will or won't have the same effect? I don't know that it is a binary debate. It is a judgment call.” (M7)</p>