

# ISO 14001:2015 - Understanding context with related risks and opportunities - A South African construction industry perspective

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## **ABSTRACT**

ISO 14001-based Environmental Management System (EMS), according to extant literature, is the world's most widely used voluntary environmental management tool. The 2015 version of the ISO 14001 standard introduces a new requirement, "understanding context of the organisation". The aim of this study was to explore context with related risks and opportunities to provide the understanding, from the perspective of the South African construction industry.

Three objectives were set in pursuit of the overall aim of this study: (1) To understand ISO 14001:2015-based EMS and its role in contributing to sustainability within the construction industry. (2) To explore and select the methods for determining context. (3) To establish the context of one specific South African construction organisation by determining organisation issues (internal and external) and the needs of relevant interested parties. Literature review was used to achieve objective (1) and (2). Objective (3) was pursued using the methods selected from objective (2). The results from the literature review and application of methods outlined above were synthesised.

With regard to objective (1), the literature review shows that since ISO 14001 standard can be applied to any organisation or industry, the construction industry organisations, or any industry for that matter, should not be treated in any special way, the only difference lies in the organisational factors or "context". Additionally, the construction industry has been reported to lag behind in delivering on sustainability expectations, mainly due to contextual factors. The literature review also shows that ISO 14001-based EMS has an important role in contributing to sustainability in construction. In fact, the internal motivations which are known to drive their adoption can be strategically harnessed to drive more substantive environmental performance results (sustainability).

As for objective (2), this study acknowledges the well-known lack of a universally agreed method for determining context and shows what could be considered an effective process for understanding context. With respect to objective (3), one key finding is that the context determined at higher levels of the organisations will not always be entirely applicable at the lower levels and so context should also be determined at the relevant organisational levels and functions, consistent with extant knowledge. In addition, contrary to the extensive literature suggesting that organisations are more motivated by internal factors to adopt the ISO-based EMS, this study reveals that the construction firm in focus will have to deal with - and balance both external and internal issues. Existing literature indicates that the balancing act should be based on risks and opportunities, which are rooted in the elements of context.

Lastly, drawing on the overall outcomes and the experiences gained, this study suggests the promotion of the view that since organisational issues cannot exist in a vacuum, the entities (interested parties or stakeholders) related to those issues could be looked at as the conduits through whom the organisations can engage with those organisational issues. Thus, understanding context of the organisation, articulated in this study and contemplated in the ISO 14001:2015 standard, essentially comes down to effectively understanding stakeholder matters.

**Keywords:** Context; interested parties; construction industry; ISO 14001; risks and opportunities.

## DEDICATION

This mini-dissertation is dedicated, firstly, to my parents for helping me become the person I am. Secondly, and more specifically, this work is dedicated to the memory of my dad who taught me about context, even before the word context, itself, formally entered my personal vocabulary. He used to say, "*When you understand something, you get liberated*", and as the great teacher he was, he used to also say, "*The sources of the questions are also the sources of the answers*". He used this concept a lot to make sure that his learners got the understanding that they yearned for - and only now I realise this was an early lesson on *context*. It is my hope that the readers of my work will feel "*liberated*" in some way, particularly from the perspective of management systems or other change effort standpoints.

## **PREFACE**

This study has been conducted from two approaches: The literature review and practical utilisation of the literature review outputs. The practical part of the study involved dealing with other people, some of whom I will mention here. There are also some of the names of private entities (stakeholders) identified from this study, presented in the annexures, A to C, which have deliberately been withheld or concealed because prior permission was not sought before publication of this min-dissertation. In addition, the name of the construction company selected for this study has also been withheld for the same reason and to avoid jeopardising the company's strategic intentions. Furthermore, due care has been taken to ensure the sensitivities associated with the issues identified and the entities involved are toned down. If this is found not to be the case, it is purely unintentional on my part.

As mentioned above, the practical portion of this study was, in a sense a stakeholder engagement exercise, of some sort. Other stakeholders immensely assisted in making this study possible. Firstly, I would like to acknowledge the help rendered by my initial research supervisors, Dr J.A Wessels (supervisor - NWU-SA) and Dr J. Pope (co-supervisor, NWU – based in Australia) for all the time dedicated to directing my work to be what everyone else reads today. Dr J.A Wessels left the NWU before this study was finalised. I would also like to thank Prof. F. Retief for his help in finalising the study.

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I would further like to thank my family and friends for understanding that I needed to be alone, more often than being with them, to study for all our good, with the understanding that good degrees, especially Master's Degrees like this one, are not easily obtained! I appreciate your being patient with me.

In addition, I would like to thank my co-workers at the time this research was conducted, Ravin Naidoo, Viola Sydwell (VS), Sandra Brown (SB), Carol Omara-Ojungu (COO), Nobuhle Luthuli (NL), Lizelle de Vrye (LdV), Marnus Botha (MB), Riaan Kriel (RK), Marvin Dunn and Lionell du Preez (LdP) for their active participation in the workshops to determine the organisational issues (external and internal) and stakeholder analysis, both at business unit (corporate) and project level. This research work would not exist in this form without their help.

I would be ungracious if I made no specific mention of, or thanked Dr Jan-Albert Wessels, Dr Jenny Pope and Ms Lizelle de Vrye, for their contributions in critiquing my drafts, which helped to push this mini-dissertation to more clarity.

I am grateful to many others not specifically mentioned here for their encouragement and support during the course of my studies.

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## **LIST OF ABBREVIATIONS**

<b>EMS</b>	Environmental management system
<b>CIDB</b>	Construction Industry Development Board
<b>BUL</b>	Business unit level
<b>OUL</b>	Operational unit level
<b>DEAT</b>	Depart of Environmental Affairs and Tourism

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## CHAPTER 1 INTRODUCTION

### 1.1 Background to the research

The planetary [earth] environment is composed of a system of both living and non-living things, displaying great variability, intricately interconnected (Biermann, & Dingwerth, 2004:1; Reed, 2008:2418; Tippett *et al.*, 2007:10; Miller & Spoolman, 2009:6; Everard, 2011:13). Humans, as an integral part of this planetary system, in their quest for survival are increasingly exerting pressure on natural systems, as their populations increase (Bansal, 2005:198; Miller & Spoolman, 2009:6; Everard, 2011:13). Global environmental problems are viewed from this perspective, i.e., as dynamic, interconnected and increasingly complex, requiring new management strategies or tools to align global action onto the path for long-term protection of the environment and human health (Barrow, 2006:215; Reed, 2008:2418; Miller & Spoolman, 2009; Burke *et al.*, 2017:43). The ISO 14001-based Environmental Management System (EMS), is part of the suite of environmental management tools (Barrow, 2006; Nel & Alberts, 2016). The ISO 14001 standard, which stipulates requirements for EMS, is a member of ISO 14000 series of environmental management standards (Bansal & Bogner, 2002:271; ISO, 2015a; ISO, 2009b; Dereinda & Greenwood, 2015:2). The ISO 14001 standard was initially launched in 1996 (Barrow, 2006; Nel & Alberts, 2016). Based on the Deming-*Plan-Do-Check-Act*-cycle, ISO 14001 provides a framework for systematically dealing with environmental issues and continual environmental performance (Zilahy, 2017:24; Salim *et al.*, 2018:645). ISO 14001 can be applied to any organisation or industry (ISO, 2009b; Potoski & Prakash, 2013:273; Campos *et al.*, 2015:286; ISO, 2015a; Iatridis & Kesidou, 2016:3; Boiral *et al.*, 2017:2). Since its launch, the ISO 14001 standard has been revised twice, in 2004 and 2015 (ISO, 2015a; Zutshi & Creed, 2015:92).

ISO (2015a) introduces new concepts and enhances others, in response to the ever-changing circumstances (Fonseca, 2015:43; Zilahy, 2017:23). Key among these is the introduction, in clause 4, of the requirement for organisations to “understand context of the organisation” (ISO, 2015a; LRQA, 2017). In addition, the leadership role has been made more prominent and that environmental management must form part of the firms’ strategic management activities (Nel & Alberts, 2016). Part of what this strategic management perspective entails, is for firms to understand *external and internal organisational influences, managing conflicts, and building partnerships* (Johnson *et al.*, 2008:12; Mathur *et al.*, 2008:601). The requirement for organisations to understand context of the organisation is the crux of this strategic management perspective (ISO, 2015a; LRQA, 2017).

The objective of the ISO 14001 standard is to contribute to the goal of sustainability (BSI, 2015:3; Fonseca, 2015:40; ISO, 2015a; Salim *et al.*, 2018:646). Sustainability is a strategic or long-term concept or aspiration (Johnston *et al.*, 2007:62; Bal *et al.*, 2013:697; ISO, 2015a). The term “sustainability” can mean different things to different constituencies, in different circumstances, and thus, such circumstances must be specified every time (Johnston *et al.*, 2007:60; Ramsey, 2015:1085). Determining the “context of the organisation” when setting up the EMS, as stipulated in the ISO 14001 standard (ISO, 2015a), equates to establishing the context for sustainability within that specific organisation (Fonseca, 2015:40; ISO, 2015a; Leehane, 2016:8; LRQA, 2017).

## **1.2 Research problem**

Clause 4 of the 2015 version of the ISO 14001 standard requires organisations to determine external and internal organisational issues, as well as, the needs and expectations of interested parties, as part of understanding organisational context (ISO, 2009a; ISO, 2015a). The ISO 14001 standard further requires that organisations determine which of the needs and expectations of interested parties become compliance obligations (ISO, 2015a). As part of understanding context of the organisation, the ISO 14001 standard also requires that the scope of the EMS be defined (BSI, 2015:5; ISO, 2015a). Scope is the extent or limit to which internal and external issues, as well as, the needs and expectations of interested parties (and hence, compliance obligations) will be applied in the EMS (BSI, 2015:5; ISO, 2015a). The ISO 14001 standard looks at “context of the organisation” as “a high-level, conceptual understanding of the important external and internal organisational issues that can affect, either positively or negatively, the way the organisation executes its responsibilities in pursuit of its business objectives” (ISO, 2015a).

External and internal organisational issues, according to ISO (2015a), “are important topics for the organisation, problems for debate and discussion or changing circumstances that affect the organisation’s ability to achieve the intended outcomes it sets for its environmental management system”. An interested party is a “person or organisation that can affect, be affected by or perceive itself to be affected by a decision or activity”, as defined by ISO (2015a). The terms “interested parties”, “interested and affected parties” and “stakeholders” are used interchangeably in this study (ISO, 2015a; ISO, 2009a; DNV-GL, 2015).

Firstly, the external organisational issues are factors external to the organisation and outside the control of the organisation, unlike internal factors over which they have better control (Freeman *et al.*, 2010:105; Galeazzo & Klassen, 2015:159; LRQA, 2017). Both external and internal organisational issues are dynamic, subject to constant change (IFC, 2007:2; Johnson *et al.*, 2008:57). The external and internal factors are complex and interconnected, as highlighted by Hartel and O'Connor (2014:419). Organisations are understood to be motivated by different factors to implement ISO-based environmental management systems (Boiral *et al.*, 2017:22; Grandic, 2017:28). In fact, it has been highlighted that organisations are more motivated by internal factors than external factors to implement ISO-based environmental management systems (Vastage & Melnyk, 2002:4760; Aravind & Christmann, 2011:18; Heras-Saizarbitoria *et al.*, 2011:192; Iatridis & Kesidou, 2016:1; Boiral *et al.*, 2017:22; Vilchez, 2017:35). On the other hand, the sustainability goal, which is also the goal the ISO 14001 standard seeks to contribute to, is known to be driven by both external and internal organisational factors (Pojasek, 2013:84; ISO, 2015a).

Secondly, organisations exist to make profits, not just to deal with the expectations of interested parties (Mitchell *et al.*, 1997:855; Banks *et al.*, 2016:18), some of which may not necessarily be requirements of the organisation (Ackermann & Eden, 2011; ISO, 2015a; LRQA, 2017). The needs and expectations of interested parties can be quite divergent and dynamic, i.e., are subject to change (Mitchell *et al.*, 1997:871; Preble, 2005:427; ISO, 2010; Banks *et al.*, 2016). Some interested parties have power, which they can exert on the organisations, either reasonably or unreasonably (Mitchell *et al.*, 1997:863; Preble, 2005:411; Reed *et al.*, 2009:1938). Yet, for organisations to thrive, they must deal effectively with the expectations of interested parties (Ackermann & Eden, 2011; Aravind & Christmann, 2011:10; Banks *et al.*, 2016).

Thirdly, sustainability, the ultimate goal of ISO 14001-based EMS, is a strategic or long-term concept or aspiration (Johnston *et al.*, 2007:62; Bal *et al.*, 2013:697; ISO, 2015a), but the construction activities, and sometimes, construction organisations themselves (the setting for this research), are temporary undertakings, with definite start and end dates (Dubois & Gadde, 2002:629; PMI, 2013:1; Jensen *et al.*, 2016:9). Temporary as used here, according to PMI (2013:1), relates to the actual activity of construction (the exact setting for this study) having a limited duration and does not refer to the value or product or service created from the construction activities, which are usually designed for long-term benefits. The construction industry, globally, is responsible for significant environmental degradation, particularly the disruption of ecological systems (Zutshi & Creed, 2015:93; Campos *et al.*, 2016:454; Jensen *et al.*, 2016:6). It is, therefore, important that sustainable approaches are entrenched into the ways in which the industry executes construction activities (Arts & Faith-Ell, 2012:3249).

Lastly, but not in any way the least, the 2015 version of the ISO 14001 standard requires organisations to “understand context of the organisation” (clause 4), seen as a combination of external issues, internal issues and expectations or needs of interested parties (ISO, 2015a). Interestingly, extensive scholarly research results have converged on the fact that “context”, which is an organisation-specific phenomenon, is one of the principal factors the same or standardised intervention, such as ISO 14001-based EMS, deployed to different organisations gets implemented differently and yields different results (Yin & Schmeidler, 2009:482; Hartel & O’Connor, 2014:419; Fonseca, 2015:41; Harvey *et al.*, 2015:48; Arimura *et al.*, 2016:565; Leehane, 2016:6; Boiral *et al.*, 2017:2). The complete understanding of what or how aspects of these external and internal factors that influence performance results is still a subject of great academic debate, as highlighted by Yin and Schmeidler (2009:482) and Chen *et al.* (2017:1583).

### **1.3 Research aim and objectives**

This study aims to understand context of the organisation; clause 4 of the ISO 14001:2015 standard, with related risks and opportunities, from the perspective of the South African construction industry. The following objectives have been set and are to be met in pursuit of the achievement of the overall aim of this study:

- (1) To understand ISO 14001:2015-based EMS and its role in contributing to sustainability within the construction industry.
- (2) To explore and select the methods for determining context.
- (3) To establish the context of one specific South African construction organisation by determining internal and external issues, and the needs and expectations of relevant interested parties.

Literature review was used to achieve objective (1) and (2) (Rundolf, 2009; Roberts, 2010:86; Walliman, 2011; Creswell, 2014; Pandey & Pandey, 2015). Objective (3) was pursued using the methods selected from objective (2) (Roberts, 2010:86). The results from the literature review and application of methods outlined above were synthesised. From the outputs of the practical application of the selected methods, the “context of this organisation” selected for this study is established and discussed, as suggested by Roberts (2010:86). This results, discussion and subsequent conclusions constitute the understanding of context of the organisation.



#### **1.4 Significance of the research**

The ISO 14001 standard looks at “context of the organisation” as a combination of the organisational issues (external and internal) and the needs or expectations of interested parties, or stakeholders (ISO, 2015a). Firstly, the organisational issues are themselves dynamic and subject to constant change (IFC, 2007:2; Johnson *et al.*, 2008:57). In addition, these organisational issues are also complex and interconnected, as highlighted by Hartel and O’Connor (2014:419). The objective of the ISO 14001 standard is to contribute to the goal of sustainability (ISO, 2015a; Fonseca, 2015:40; Leehane, 2016:8; Salim *et al.*, 2018:646). The sustainability goal itself, is known to be driven by both external and internal organisational factors (Pojasek, 2013; ISO, 2015a)

Secondly, as part of understanding the context of the organisation, the ISO 14001 standard requires organisations to determine the needs and expectations of interested parties (ISO, 2015a). Organisations exist to make profits, not just to deal with the expectations of interested parties, which can be quite divergent and dynamic, (Mitchell *et al.*, 1997:855; Reed *et al.*, 2009:1934; Banks *et al.*, 2016). Yet, academic researchers have also argued that for organisations to thrive, they must deal effectively with the expectations of interested parties (Mitchell *et al.*, 1997; Ackermann & Eden, 2011; Aravind & Christmann, 2011:10; Banks *et al.*, 2016). So, organisations must learn to balance between their pursuit for profits and dealing with stakeholder matters.

Thirdly, the objective of the ISO 14001 standard is to contribute to the goal of sustainability (Fonseca, 2015:40; ISO, 2015a; Salim *et al.*, 2018:646). The term “sustainability” can mean different things to different constituencies and according to Johnston *et al.* (2007:61), Ramsey, (2015:1085) and others, it has to be presented within a given context. Therefore, understanding the “context of the organisation”, in terms of the ISO 14001 standard, equates to understanding the context for understanding sustainability within that particular organisation (ISO, 2015a; Ramsey, 2015:1085).

Lastly, the outcomes of the extensive research conducted by various researchers to understand why the same intervention deployed to different organisations (or different divisions within the same organisation) gets implemented, in the same way or differently, and yields different results have converged at the fact that “context”, which is an organisation-specific phenomenon, is the main reason for the differences in the outcomes (Yin & Schmeidler, 2009:482; Hartel & O’Connor, 2014:419; Harvey *et al.*, 2015:48; Arimura *et al.*, 2016:565; Leehane, 2016:6). In spite of the foregoing, the complete understanding of what or how aspects of organisational context influence performance results, was found to be lacking from available literature (Yin & Schmeidler, 2009:482; Arimura *et al.*, 2016:565; Boiral *et al.*, 2017:24).

In addition, the foregoing revelation that such an important influential factor of organisational performance, as context is, is under-studied, serves to elevate the importance of this study. The outcomes of this study could be useful to both EMS practitioners and academic researchers in shedding more light on how to effectively understand the context of the organisation, in terms of the ISO 14001 standard. “Context of the organisation” (clause 4) is the most important element of the ISO 14001-based EMS, as the rest of the elements are rooted in that context (ISO, 2015a).

## **CHAPTER 2 RESEARCH DESIGN AND METHODS**

### **2.1 Introduction**

Research is considered as an attempt to uncover, advance and validate existing information or knowledge about a given topic or theme (Walliman, 2011:15; Creswell, 2014; Pandey & Pandey, 2015:8). A multitude of methods of research are available in literature and are chosen for practical application on the basis of the researcher's preference, orientation and the objectives of the research (Roberts, 2010:51; Walliman, 2011:16; Creswell, 2014). As seen in section 1.3, this study aims to "understand context of the organisation" with related risks and opportunities, from the perspective of the South African construction industry. The study objectives established to support the achievement of the overall aim of this study are outlined in section 1.3. This section presents the approaches deployed to understanding context of the organisation.

### **2.2 Research design**

The focal point for this research is the South African construction industry. The research is conducted on a single construction industry organisation (Yin, 1994:38). The understanding that context is an organisation-specific phenomenon (Yin & Schmeidler, 2009:482; Arimura *et al.*, 2016:565), makes the single case study a suitable approach (Yin, 1994:38). The construction industry is chosen as settings for the study based on the convenience, experience and understanding of realities of the construction environment by the researcher, as Walliman (2011:16) suggests.

The idea to base the research strategy on the aims and objectives, as suggested by Roberts (2010:149) and Creswell (2014) has been used in this study. Consequently, literature review is used in pursuit of objective (1) and (2) outlined in section 1.3, as suggested by Creswell (2003:22), Biggam (2008:22) and Creswell (2014). Objective (3) was pursued using the methods selected from objective (2), as suggested by Roberts (2010:86). The results from the literature review and application of methods outlined above were synthesised, as modelled in Figure 2-1 (page 8). The specific methods utilised achieving the set study objectives are presented in the next section (2.3.3, page 8).

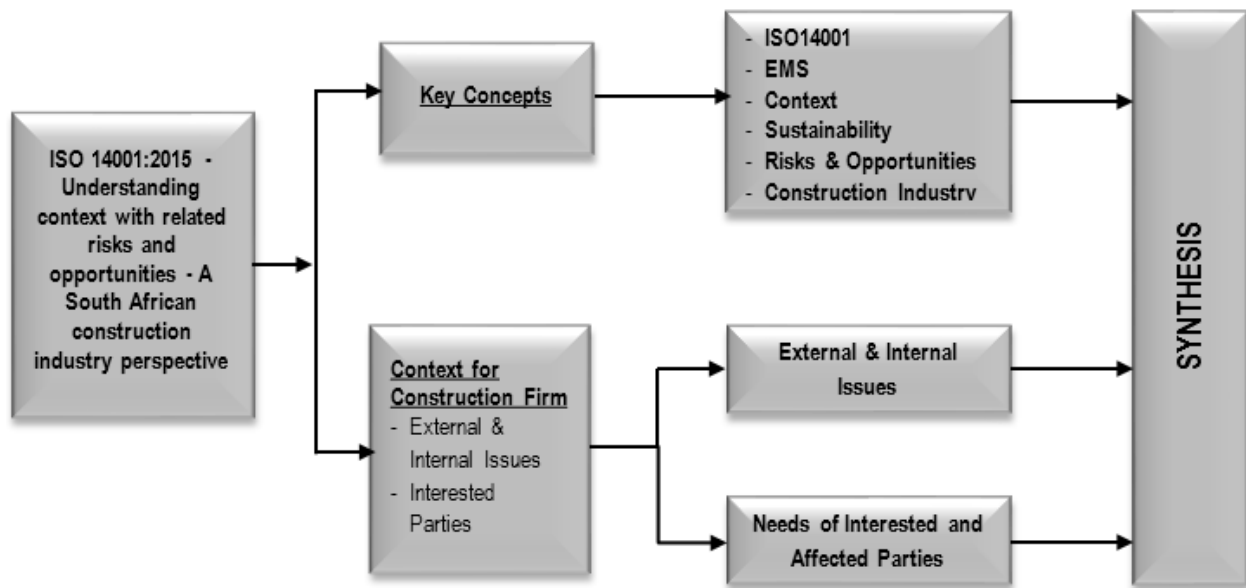


Figure 2-1: Research framework

(Adapted from Biggam, 2008:113)

## **2.3 Data collection, analysis and reporting methods**

### *2.3.1 Introduction*

As stated in section 2.1 above, research is considered as an attempt to uncover, advance and validate existing information or knowledge about a given topic or theme (Walliman, 2011:15; Creswell, 2014; Pandey & Pandey, 2015:8). Additionally, a multitude of methods of research are available in literature and are chosen for application on the basis of the researcher's preference, orientation and the objectives of the research (Roberts, 2010:51; Walliman, 2011:16; Creswell, 2014). In order to achieve the study aim, a combination of research methods is used, as highlighted by Creswell (2003:22), Biggam (2008:119) and Roberts (2010:144). The data for this study are gathered as outlined below, starting with literature review.

### *2.3.2 Literature review as a research method*

Literature review is generally used as a process step in research and has been used in this study to gain more insight into the "context and related risks or opportunities", as well as, to formulate the problem statement (Rundolf, 2009; Roberts, 2010:86; Walliman, 2011; Creswell, 2014; Pandey & Pandey, 2015). Literature review is also used to link the findings in this study to previous findings by other researchers, to draw conclusions and recommendations, as other researchers have suggested (Boote & Beile, 2005:5. Bolderston, 2008:86; Rundolf, 2009:2; Clark & Horton, 2010:10; Roberts, 2010:86; Walliman, 2011:56; Creswell, 2014) and to provide insights into the research design and methods.

Literature review involves information analysis and synthesis (Grant & Booth, 2009:91; Rundolf, 2009:2; Walliman, 2011:58; Cisco, 2014:43). Although Grant & Booth (2009:106) acknowledges that there is no universal concord on the characterisation of the types of literature reviews, the type of review characterised by Grant & Booth (2009:93) and Booth *et al.* (2012:26) as “critical review” was used in this study because of its perceived strengths. The critical review outlined by Grant & Booth (2009:94) and Booth *et al.* (2012:26) entails extensively searching available literature to identify significant information on the chosen research topic, after which the information is evaluated, relevant concepts brought out and discussed. This approach by Grant & Booth (2009:94) and Booth *et al.* (2012:26), was seen as relevant to achieving the research objectives and was used in combination with the idea suggested by Roberts (2010:89) and Healy and Healy (2016:20). Roberts (2010:89) and Healy and Healy (2016:20) suggest identifying the broad search terms related to the chosen research topic, depicted in Figure 2-2 (page 10) as level 1 search, followed by a more focussed search from level 1 search outputs. Biggam (2008:51) also suggests the use of search terms from research objectives to conduct a more focussed search. The more focussed search is depicted as level 2 search in Figure 2-2.

The process followed in synthesizing or distilling information on the research topic, “context of the organisation”, for further processing is that suggested by Roberts (2010:100), Walliman (2011:85), Booth *et al.* (2012:3) and others of analysing or looking for patterns or trends across the information reviewed to track advances with time, while noting common or repeated research results.

The literature review framework outlined in this section has also been applied to the literature review of “literature review” itself. The information pertinent to the chosen research topic published in *journals, conference papers, books and on the internet*, is reviewed in this study, as suggested by Walliman (2011:53), Cresswell (2014) and others. The search terms in level 1 and level 2 in Figure 2-2 (page 10), are used to structure the literature review chapters, as suggested by Biggam (2008:113) and Roberts (2010:174). The preceding and subsequent sections of this mini dissertation are, thus, the outputs of the literature review as described in this section.

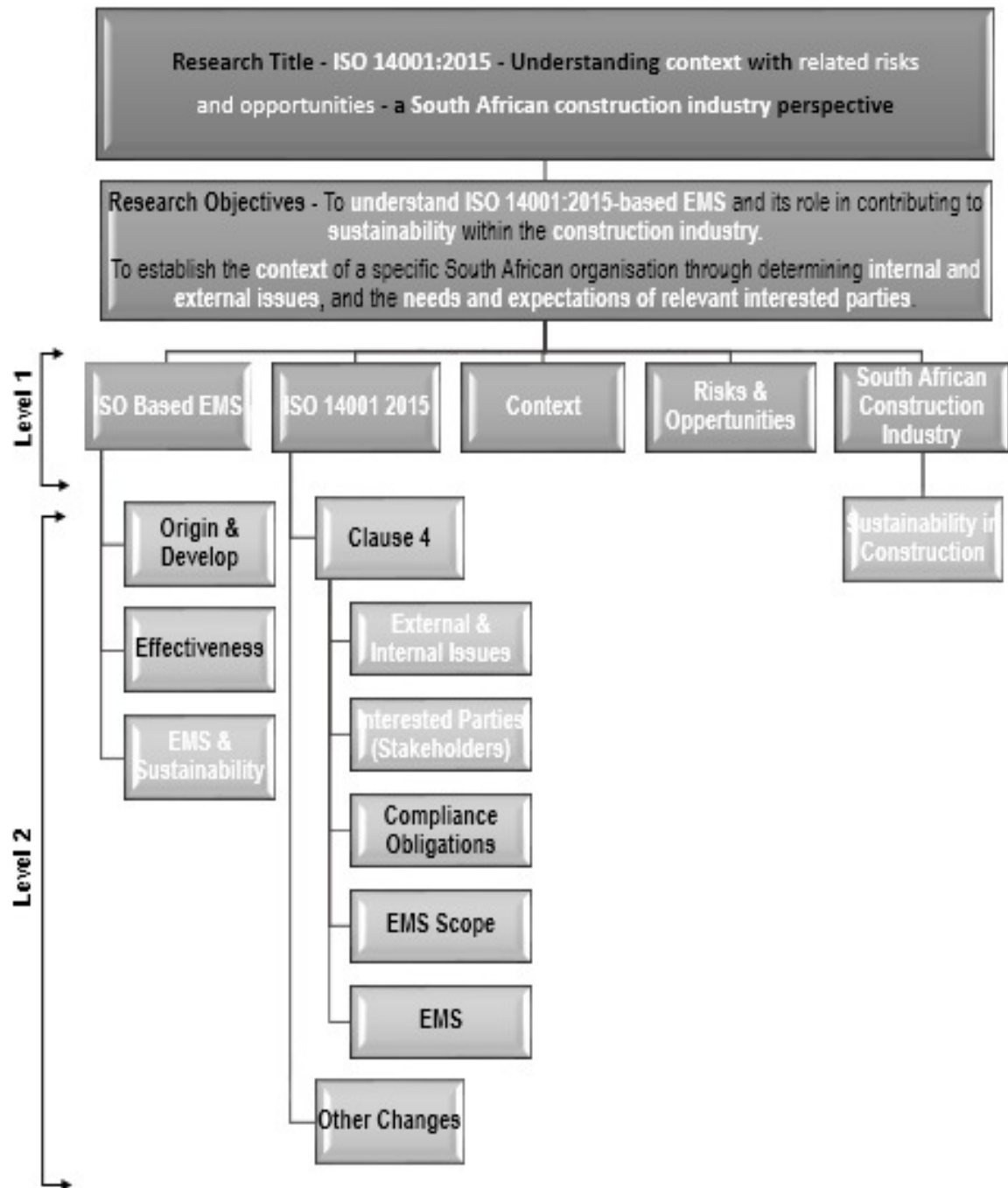


Figure 2-2: Literature review framework

(Adapted from Biggam, 2008:113, Robert, 2010:89, Healy & Healy, 2016:20)

### 2.3.3 Data collection methods

In order to achieve the aim of the study as outlined in section 1.3, a combination of research methods is used (Cresswell, 2003:22; Biggam, 2008:119; Roberts, 2010:144). Firstly, literature review is used to achieve objective (1) and (2) (Walliman, 2011:15; Pandey & Pandey, 2015:8). Objective (3) was pursued using the methods selected from objective (2) (Roberts, 2010:144). The research is conducted on a single construction industry organisation (Yin, 1994:38). The understanding that context is an organisation-specific phenomenon (Yin & Schmeidler, 2009:482; Arimura *et al.*, 2016:565), makes the single case study a suitable approach (Yin, 1994:38). The selected methods are utilised at two levels within the organisation - the business unit level and one of the operational unit (project) levels. The selected South African construction firm has multiple construction project sites running concurrently. These organisational levels are described in more detail in section 3.2.3.

Accordingly, the method selected for determining external organisational issues is the PESTLE (political, economic, sociological, technological, legal and environmental) analysis, seen as the most widely used (Johnson *et al.*, 2008; ISO, 2015d; Louw & Venter, 2017; LRQA, 2017). The PESTLE analysis is highlighted in more detail in section 3.4.2. Internal organisational issues are also determined using a method similar to the PESTLE analysis, except the dimensions used are “processes”, “knowledge”, “systems” and “people” (PKSP), as indicated by ISO (2015a). Internal organisational issues are also presented in more detail in section 3.4.2. The PESTLE and PKSP analyses were used in this study in workshop format (facilitated by the researcher), as suggested by Johnson *et al.* (2008:57). More details on organisational issues are provided in section 3.4.2 and discussed further in section 4.

Furthermore, stakeholder analysis (identification and classification) methods selected from literature and practically used in this study are described below. Like organisational issues, the stakeholder identification is also conducted in brain-storm sessions (workshop format), as suggested by (Johnson *et al.*, 2008:57; Reed *et al.*, 2009:1937), facilitated by the researcher. The reasons for the choice of the stakeholder analysis methods are detailed in section 3.4.3. During the brain-storming sessions, the stakeholders were linked to organisational issues so that it is easy to visualize what is happening within the business environment - an idea put forward by Bryson *et al.* (1990:184), Pacheco and Garcia (2012:2177) and Ward and Chapman (2008:571). Stakeholders and their expectations were analysed or classified using the “power/interest” matrix (Ackermann & Eden, 2011:183).

As part of understanding context of the organisation, clause 4 of the ISO 14001:2015 standard stipulates that the organisations must determine which of the organisational issues and the expectations of interested parties become compliance obligations (ISO, 2015a). Criteria used to determine what issues become compliance obligations are put together in section 3.4.4. Accordingly, any stakeholder issue satisfying one or more of the requirements stipulated in section 3.4.4, is identified as part of the compliance obligations. More details on compliance obligations are presented in section 3.4.4. The information or data gathered, as outlined above, is analysed, as indicated below.

#### *2.3.4 Data analysis and reporting*

The outcomes of both the literature review and the practical application of the methods selected for determining organisational issues (external and internal) and stakeholder analysis are synthesized (and discussed), as modelled in Figure 2-1 (page 8). Then, from the synthesis, conclusions and recommendations are drawn, as suggested by Cresswell (2003:22) and Cresswell (2014). As part of the synthesis, the outputs of the practical application of the selected methods are discussed in relation to literature review outputs (Roberts, 2010:86), presenting the different facets of “context of this organisation”. The last part of the synthesis process is the conclusion, which are bold statements about new thinking derived from this study or relationships of findings in this study with previous studies and the extent to which this study achieves the set objectives and hence the study aim (Cresswell, 2014).



## CHAPTER 3 LITERATURE REVIEW

### 3.1 Introduction

This study aims to understand context of the organisation; clause 4 of the ISO 14001:2015 standard, with related risks and opportunities, from the perspective of the South African construction industry. The study objectives determined for helping to achieve the foregoing aim, outlined in section 1.3, are addressed using two approaches: literature review and pragmatic study, as outlined in section 2.0. This chapter presents the information distilled from literature considered relevant to the achievement of the study aim and objectives. Since the study setting is the South African construction industry, this chapter commences with exploring the construction industry perspectives before bringing in the ISO 14001-based EMS.

### 3.2 Understanding the construction industry

#### 3.2.1 Global perspectives

The construction industry is a key contributor to social-economic development in all nations of the world (Bal *et al.*, 2013:696; Campos *et al.*, 2016:453; Pillay & Mafini, 2017:1), contributing 10% to the United Kingdom GDP (Bal *et al.*, 2013:696) and 4% to the South African economy (Pillay & Mafini, 2017:1). Rust and Koen (2011:4) reports construction industry global average contribution to GDP at 10%. The construction industry thrives on the constant need by public or private sector entities to provide and maintain adequate infrastructure or services for the growing human populations, or simply catching up with infrastructure backlogs, especially, in developing countries (Rust & Koen, 2011:2; Campos *et al.*, 2016:454; PWC, 2016:3; Pillay & Mafini, 2017:3). The construction business trends indicate that the sector is not stable, constantly fluctuating (boom and gloom), in tune with the level of national or global economic activity (Rust & Koen, 2011:2; Bal *et al.*, 2013:696; Pillay & Mafini, 2017:2).

Construction is a phase in the project life cycle, namely: *planning, construction, operation and decommissioning* (Arts & Faith-Ell, 2012:3240; PMI, 2013:39). Construction projects are temporary undertakings, with definite start and end dates, which tends to induce some sense of urgency on the project teams (Dubois & Gadde, 2002:629; PMI, 2013:1; Jensen *et al.*, 2016:9). Temporary here refers to the actual activity of construction having a limited duration and does not refer to the value or product or service created from the construction projects, as these are usually designed for long-term benefits (PMI, 2013:1).

Apart from the positive social-economic contribution made by the construction industry outlined above, the sector is also responsible for significant negative environmental impacts, particularly the disruption of ecological systems (Zutshi & Creed, 2015:93; Campos *et al.*, 2016:454; Jensen *et al.*, 2016:6). Given that construction is undertaken under very tight budgets and deadlines, it is important that sustainable approaches are entrenched into the ways in which the industry executes construction activities to limit the negative impacts (Arts & Faith-Ell, 2012:3249; Jensen *et al.*, 2016:6).

Construction projects are also usually unique, meant to create a unique product, or service or a given result or value (Dubois & Gadde, 2002:629; PMI, 2013:3). The uniqueness of these construction projects implies that there is not one construction project which can be executed within the exact same environmental setting, characteristics, under the same conditions and circumstances (Dubois & Gadde, 2002:629; Bal *et al.*, 2013:696). Furthermore, and as Dubois and Gadde (2002:629) highlights, this uniqueness implies that each construction project has its own performance criteria, a phenomenon which tends to limit cooperation or collaboration within an organisation handling multiple projects.

In addition, the construction project organisations generally execute construction projects on behalf of project sponsors (PMI, 2013:3). In most of these cases, the different construction contractors are brought in at different stages to execute their specific scopes of work, usually under very strict pre-determined conditions, such as the construction environmental management plans (CEMPs) and the project sponsors' health and safety specifications (Jensen *et al.*, 2016:7; South Africa, 2014).

These construction firms, sometimes, form partnerships or joint ventures (JVs) with other organisations in the execution of the construction projects (Bresnen, 2009; Bygballe *et al.*, 2010; Gadde & Dubois, 2010; Crespín-Mazet *et al.*, 2015; Eriksson, 2015). Crespín-Mazet *et al.* (2015:4) and Eriksson (2015:38) caution, though, that such partnerships must be founded on high organisational similarities (in terms of scope - and with the right staff in the organisations involved). In these circumstances, the JV partners may decide to adopt the organisational structures, processes and systems of parent organisations (where this applies) or may develop totally new ones (PMI, 2013:20).

Organisational structure, according to PMI (2013:21) is a factor which can influence construction organisations at operational levels in many ways, such as, the availability of resources. Whatever organisational structure or partnerships the construction project organisations adopt, they are still influenced by parent organisations (where applicable) and sponsors that are involved in such construction project ventures (PMI, 2013:20). Also, and very often, the construction organisations, give up or delegate, or sub-contract some responsibilities of the construction work scope to other construction organisations (PMI, 2013:270; CIDB, 2016).

The business management processes within the construction industry organisations are not necessarily different from those processes encountered in other industries – the only difference is in the situational factors (Bresnen & Marshall, 2001:335), characterised as “context” in this mini dissertation. To ensure success, a good understanding of this context is key so that construction project execution strategies can be aligned with that context (PMI, 2013:19).

### *3.2.2 The South African perspective*

Construction activities, according to Pillay and Mafini (2017:3) and South Africa (2014) involve the *planning, design, construction, maintenance and eventual demolition of buildings and the common infrastructure*. The South African construction firms face specific challenges, such as, tough external competition from foreign firms - which tend to bid at lower rates; lack of skilled labour; corruption; industrial unrests; socio-economic inequalities brought about by the discriminative Apartheid past and fluctuating market conditions (Rust & Koen, 2011:2; Mulder, 2013; PWC, 2016; Pillay & Mafini, 2017:3). Similarly, the sustainability intentions within the South African construction sector are frustrated by factors similar to ones above - some of which are mainly external to the industry, such as, the lack of capacity by regulatory authorities to monitor, enforce and follow-up on sustainability commitments (Wessels, 2015:19).

Within the South African construction sector, more than three quarters of the construction companies are classified as small- and medium-scale contractors (Pillay & Mafini, 2017:3). This category of contractors is equivalent to the Grade 1 to Grade 6 in terms of the CIDB grading system, whereby Grade 1 is equivalent to those seeking to undertake government jobs to the value of R200 000, and Grade 9 reflecting the largest enterprises with annual turn-overs in the order of billions of Rands (CIDB, 2012:1). Grade 6 threshold is R13-million (CIDB, 2012:1). Grade 7 is equivalent to the firms earning R13-million or more, while R130-million or more is the threshold for Grade 8 firms (CIDB, 2012:1). The CIDB grading outlined above is based on the financial management capability (CIDB, 2012:1). The full picture of the CIDB grading, in terms of financial management capability, is presented in Figure 3-1, sourced from (CIDB, 2016).

Designation	Upper limit of tender value range	Best annual turnover	Largest contract	Available capital
2	R650 000	–	R130 000	–
3	R2 000 000	R1 000 000	R450 000	R100 000
4	R4 000 000	R2 000 000	R900 000	R200 000
5	R6 500 000	R3 250 000	R1 500 000	R650 000
6	R13 000 000	R6 500 000	R3 000 000	R1 300 000
7	R40 000 000	R20 000 000	R9 000 000	R4 000 000
8	R130 000 000	R65 000 000	R30 000 000	R13 000 000
9	No limit	R200 000 000	R90 000 000	R40 000 000

Figure 3-1: CIDB grading criteria in terms of financial capability

Contrary to South African government’s intentions, to promote small and medium enterprises, more than three quarters of government infrastructure expenditure goes to the firms in Grade 7 to Grade 9 (CIDB, 2012:1; Pillay & Mafini, 2017:3). According to CIDB (2012:1), it is expected that these large contractors will then enrol or sub-contract some of the work to smaller contractors.

### 3.2.3 The company perspective

The construction company selected as settings for this study is in Grade 9 of the CIDB grading system outlined above. The company is multi-national and has a number of construction projects running concurrently. The company is not immune to the boom and gloom of the construction business already highlighted in section 3.2.1 (Bal *et al.*, 2013:696; Pillay & Mafini, 2017:2). The company is structured as outlined by Johnson *et al.* (2008:7) and depicted in Figure 3-2 below.

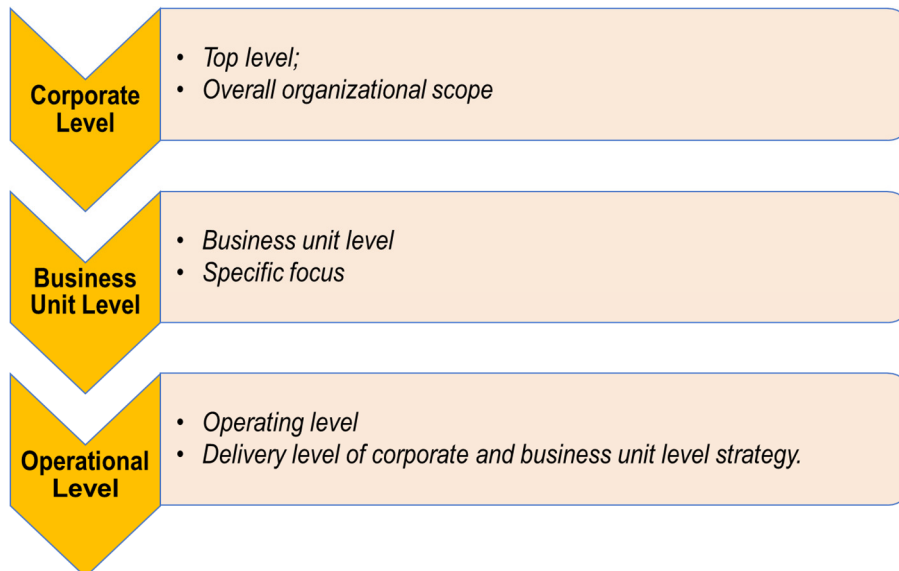


Figure 3-2: Levels of organisational strategy.

(Source: Johnson *et al.*, 2008:7)

This study focuses on one of the construction projects, a government infrastructure project, (operational level in Figure 3-2, page 16) and takes the parent or corporate (corporate and business unit level in Figure 3-2) settings into account. The construction company has established an EMS which is certified to the ISO 14001 standard, at the business unit level. The operational level EMS activities are, thus, parts of the business unit level EMS. In addition, the organisation is segregated at the operational level in question as a level 3 contractor, as depicted in Figure 3-3.

	Client HSE Specs (Specifications) (Including CEMP Requirements)	Client HSE Specifications (Including CEMP Requirements)	PC HSE Specifications (Including CEMP Requirements)	PC HSE Specifications (Including CEMP Requirements)	PC HSE Management System Requirements	PC HSE Management System Requirements	Contractor (MRPE) HSE Specs (Including CEMP Requirements)	Contractor (MRPE) HSE Management System Requirements	Sub-Contractor HSE Specifications (Including CEMP Requirements)	Sub-Contractor HSE Specifications (Including CEMP Requirements)	Sub-Contractor HSE Management System Requirements
Level 1: Client (Project Sponsor)	X	X									
Level 2: Principal Contractor	X	X	X	X							
Level 3: Contractor	X	X	X	X	X	X	X				
Level 4: Sub-Contractor	X	X	X	X	X	X	X	X	X	X	X

Figure 3-3: Typical contractual hierarchy on a construction project

As a level 3 contractor (in Figure 3-3, above), the construction firm is contracted to the principal contractor (level 2), which in turn is contracted to the project owner (level 1). The construction company in question also has other organisations below it, in level 4. This means the requirements of an organisations at a higher level (from level 1) are passed down to the ones below. At other operational units, the construction company in question occupies a myriad of positions (levels) in terms of what is depicted in Figure 3-3. This forms part of every construction contractor’s context.

### **3.3 Understanding ISO 14001-based EMS**

#### *3.3.1 Introduction*

The EMS based on the ISO 14001 standard is part of the suite of environmental management tools (Barrow, 2006; Nel & Alberts, 2016). ISO 14001, which stipulates requirements for environmental management systems, is one of the standards in the ISO 14000 series of environmental management standards (Bansal & Bogner, 2002:271; ISO, 2015a; ISO, 2009b; Dereinda & Greenwood, 2015:2). ISO 14001 can be applied to any organisation or industry and is one of the most widely used voluntary environmental management tools globally (ISO, 2009b; Potoski & Prakash, 2013:273; Campos *et al.*, 2015:286; ISO, 2015a; Iatridis & Kesidou, 2016:3; Boiral *et al.*, 2017:2), with 346 189 certifications in place, according to the 2016 ISO survey (ISO, 2017).

The need for the establishment of environmental management standards originated from the outcomes of deliberations during the United Nations Conference on Environmental and Development (UNCED) Convention in Rio de Janeiro in 1992, where a call for the development of common standards was made (Bansal & Bogner, 2002:271; Potoski & Prakash, 2013:275). The ISO 14001 standard was launched in 1996, as the first in the 14000 series of ISO standards for environmental management (Bansal & Bogner, 2002:271; ISO, 2009b; Dereinda & Greenwood, 2015:2).

Modelled on the Deming *Plan-Do-Check-Act-cycle*, ISO 14001-based EMS provides a framework for iteratively and systematically dealing with environmental issues to achieve continual environmental performance (Ejdys *et al.*, 2016:53; Zilahy, 2017:24; Salim *et al.*, 2018:645). The EMS should be aligned with other organisational management processes, such as, planning activities, responsibilities, practices, resources (Ejdys *et al.*, 2016:52; Grandic, 2017:22).

Organisations are motivated by different factors to implement the ISO14001-based EMS (Grandic, 2017; Vilchez, 2017). However, the benefits and effectiveness of implementing the EMS are not directly linked to the motivations, but rather to the organisational characteristics (Yin & Schmeidler, 2009:469; Heras-Saizarbitoria & Boiral, 2013:59; ISO, 2015a; Zobel, 2016:603). In fact, it has been highlighted that organisations are more motivated by internal factors than external factors to implement ISO-based EMS (Aravind & Christmann, 2011:18; Heras-Saizarbitoria *et al.*, 2011:192; Iatridis & Kesidou, 2016:1; Boiral *et al.*, 2017:22; Vilchez, 2017:35). Psomas *et al.* (2011:506) highlights that these motivations are not all in line with the ISO 14001 objective.

On the other hand, the sustainability goal, which is also the goal the ISO 14001 standard seeks to contribute to (Fonseca, 2015:40; Leehane, 2016:8; ISO, 2015a), is known to be driven by both external and internal organisational factors (Pojasek, 2013:84; ISO, 2015a). The term “sustainability” can mean different things to different constituencies (Marshall & Brown, 2003:101; Marshall & Toffel, 2005:673; Barrow, 2006:340; Whitemore, 2006:313; Johnston *et al.*, 2007:60; Fonseca, 2015:38; Ramsey, 2015:1076). Since sustainability can mean different things to different constituencies, it has to be presented within a given context (Johnston *et al.*, 2007:61; Pojasek, 2013:81; Ramsey, 2015:1085).

The focal point of this study is understanding context of the organisation, clause 4 of the ISO 14001 standard (ISO, 2015a). With the objective of the ISO 14001 standard being to contribute to the goal of sustainability (Fonseca, 2015:40; Leehane, 2016:8; ISO, 2015a), determining the context of the organisation when setting up the EMS, as stipulated in the ISO 14001 standard (ISO, 2015a), equates to establishing the context for understanding or interpreting sustainability within that specific organisation.

Organisations can choose to validate their ISO 14001 EMS by obtaining certification through a third party or may simply align their EMS with the ISO 14001 standard without certification (ISO, 2009b:6; ISO, 2015a; Salim *et al.*, 2018:646). The ISO 14001 standard does not prescribe how the EMS should be implemented, neither does it prescribe certification, it simply stipulates the ingredients for environmental management systems (Vastage & Melnyk, 2002:4745; ISO, 2009b:6; ISO, 2015a). The extensive research which has been conducted, worldwide, to verify impacts of the ISO-based EMS has included both certified and uncertified organisations (Zobel, 2016; Vilchez, 2017; Salim *et al.*, 2018).

### 3.3.2 EMS effectiveness

As already mentioned in the preceding section, the benefits or the effectiveness of implementing the EMS are not directly linked to the motivations for adopting the ISO-EMS, but rather to the organisational characteristics (Yin & Schmeidler, 2009:469; Heras-Saizarbitoria & Boiral, 2013:59; Zobel, 2016:603). According to ISO (2015c), implementing an ISO-based EMS can yield benefits for the organisations, which can include: *Improvements in statutory and regulatory compliance; Increased leadership involvement and engagement of employees; Improvement in company reputation and the confidence of stakeholders through strategic communication; Improved competitive and financial advantage through improved efficiencies and reduced costs.*

Since its launch in 1996, extensive research has been conducted, worldwide, to verify impacts of the ISO-based EMS on both certified and uncertified organisations (Zobel, 2016; Vilchez, 2017; Salim *et al.*, 2018). Extremely diverse and controversial results have come out (Nel & Wessels, 2010; Zobel, 2016; Boiral *et al.*, 2017; Vilchez, 2017; Salim *et al.*, 2018). In fact, that is as it should be, given the extant convergent conclusions drawn by a wide range of researchers that the benefits of implementing the EMS are more directly linked to the organisation-specific characteristics, described as “context of the organisation” in this study (Yin & Schmeidler, 2009:482; Heras-Saizarbitoria & Boiral, 2013:59; Hartel & O’Connor, 2014:419; Fonseca, 2015:41; Harvey *et al.*, 2015:48; Arimura *et al.*, 2016:565; Leehane, 2016:6; Boiral *et al.*, 2017:21)

A systematic review of the main peer-reviewed research published between 1996 and 2015 was conducted by Boiral *et al.* (2017) to analyse the adoption and outcomes of the ISO 14001 standard. Interestingly, even though the ISO 14001-based EMS outcomes are reported as mixed or divergent by Nel and Wessels (2010:61), Zobel (2016:587) and others, Boiral *et al.* (2017:17) established that much of what has been published indicates that the ISO 14001-based EMS has a more positive impact on *legal compliance*, *environmental indicators* (waste, air pollution, environmental performance in general, energy and resources consumption, environmental risks, water), *environmental awareness and social aspects* (company image or reputation, relationships with stakeholders, employee involvement, employee training).

With regard to adoption of ISO 14001, Boiral *et al.* (2017:24) sifts out of the published literature and discusses drawbacks, success factors and contextual factors. Among the drawbacks, high costs (implementation and maintenance), time and capability constraints feature prominently (Psomas *et al.*, 2011:507; Jensen *et al.*, 2016:7; Boiral *et al.*, 2017:24). As seen in section 3.2, these drawbacks are very pertinent to the construction sector firms. Boiral *et al.*, (2017:25) also makes the point that the benefits and the drawbacks are interconnected, with benefits bringing along some challenges, and vice versa. Boiral *et al.* (2017:24) isolates leadership and employees’ involvement and commitment, as well as, the internalization of external pressures, as key success factors. Boiral *et al.* (2017:24) also makes a strong case that contextual factors, which actually influence environmental performance results, are under-studied.



Given the foregoing and the fact that these contextual factors are organisation-specific (Yin & Schmeidler, 2009:482; Heras-Saizarbitoria & Boiral, 2013:59; Hartel & O'Connor, 2014:419; Fonseca, 2015:41; Arimura *et al.*, 2016:565; Boiral *et al.*, 2017:21), combined with the lack of standardised performance indicators (Boiral *et al.*, 2017:16), it is highly unlikely that comparative studies to evaluate the effectiveness of the ISO 14001-based EMS can ever yield congruent results in all cases. The foregoing argument by Boiral *et al.* (2017:16) means that the effectiveness of the ISO 14001-based EMS will still continue to be the subject of debate in both academic circles and practice, as other researchers have similarly stated (Testa *et al.*, 2014; Vilchez, 2017; Salim *et al.*, 2018).

### 3.3.3 *Salient changes in the 2015 version of ISO 14001*

The ISO standards are supposed to be reviewed regularly to ensure that they remain relevant and effective (BSI, 2015:2; Dereinda & Greenwood, 2015:1; Fonseca, 2015:43). The ISO 14001 standard has been revised twice, since its launch - in 2004 and 2015 (ISO, 2015a; Zutshi & Creed, 2015:92). The changes that are made with every revision are influenced by the ongoing lessons drawn from practice and the outcomes of the extensive research which has been, and still is being, conducted worldwide relating to ISO 14001-based EMS (Searcy *et al.*, 2012:792; Zilahy, 2017:30; Salim *et al.*, 2018:652). Furthermore, as Zilahy (2017:23) highlights, the shifts in the way of thinking about environmental challenges and the evolution of new technological solutions also continue to influence the development of environmental management tools, which includes ISO 14000 standards. Some of the salient changes introduced into the 2015 version (third edition) of the ISO 14001 standard are highlighted below.

The ISO standard, ISO (2015a), incorporates *enhanced* requirements for *environmental performance* (Nel & Alberts, 2016; Fonseca, 2015:37; Zobel, 2016:602). This is partly to counter the weaknesses highlighted in previous research results, such as (Bansal & Bogner, 2002; Darnall *et al.*, 2008:30) who have argued that the environmental performance of an organisation could even deteriorate while the organisations continued to maintain certification. The emphasis on identifying and proactively managing risks and opportunities that could influence the achievement of the organisation's desired outcomes is also intended to enhance environmental performance (World Bank, 2014:4; Dereinda & Greenwood, 2015:1; ISO, 2015b:15). Risks and opportunities are outlined in more detail in section 3.5.

In addition, the role of top leadership has been made more prominent in the sense that the ISO 14001 standard expects organisations to make environmental management part of their strategic management activities (ISO, 2015a; Nel & Alberts, 2016). The entry into the ISO 14001 standard of the requirement for organisations to determine the context of the organisation, is also a strategic management imperative (Mitchell *et al.*, 1997:871; Johnson *et al.*, 2008:31; Mathur *et al.*, 2008:601; Ackermann & Eden, 2011:180; ISO, 2015a; Banks *et al.*, 2016:19; LRQA, 2017).

The 2015 version of the ISO 14001 standard also brings in some more focus on the process approach and life cycle thinking (DNV-GL, 2015:9; ISO, 2015a; Fonseca, 2015:46; LRQA, 2015:4; Roberts, 2016:6). The process approach entails looking at the bigger picture or taking a broader view of activities and the interrelated issues, which enhances the chances of achieving the intended results (ISO, 2015d; Roberts, 2016:6). Analysing processes and related issues entails evaluating risks and opportunities, taking all the process steps into account, from start-to-finish - *life cycle thinking* (Fonseca, 2015:46; ISO, 2015a; ISO, 2015d; Roberts, 2016:6).

In addition, the ISO 14001 standard also seeks, among other things, to align with the “*Annex SL Structure*” to facilitate alignment and integration with other management system standards (Pojasek, 2013:81; Nel & Alberts, 2016; Dereinda & Greenwood, 2015:2; Fonseca, 2015:43). The ‘*Annex SL Structure*’, according to Fonseca (2015:43) and Nel & Alberts (2016), entails that all standards will have to be revised to conform to the high-level structure (HLS) as follows: *Clause 4: Context of the organisation; Clause 5: Leadership; Clause 6: Planning; Clause 7: Support; Clause 8: Operation; Clause 9: Performance evaluation; Clause 10: Improvement*. The next section brings out the roles of ISO 14001-based EMS in the construction industry.

#### 3.3.4 ISO 14001 in the construction industry

As stated earlier (section 3.3.1), the ISO 14001-based EMS is a voluntary environmental management tool and can be applied to any organisation or industry (ISO, 2015a). While Arts & Faith-Ell (2012:3245) associates the EMS, more to the operational phase of the project life cycle, EMS implementation during the construction phase is also widely supported (Christini *et al.*, 2004; Turk, 2009; Rodriguez *et al.*, 2011; Gluch & Raisanen, 2012; Campos *et al.*, 2016; Jensen *et al.*, 2016). The 2016 ISO survey reports that there were nearly 50 000 ISO 14001 certifications in the construction sector at the end of 2016, up from only 298 in 1998 (ISO, 2017). From the strong up-take of ISO 14001 certifications worldwide since the standard was launched, it is clear the EMS has generally been well received by organisations of all sorts (ISO, 2017).

As articulated by Dubois and Gadde (2002:629), Gluch and Räsänen (2012), Pillay and Mafini (2017:2) and others, the construction business in South Africa (and elsewhere) has its boom and gloom periods. In general, the construction firms are hesitant to engage in the implementation of long-term processes, equipment and systems (Dubois & Gadde, 2002:629; Rust & Koen, 2011:7; Gluch & Raisanen, 2012; Pillay & Mafini, 2017:2). At play in the foregoing argument is the fact that construction organisations themselves, are sometimes temporary undertakings, with definite start and end dates, which tends to induce some sense of urgency on the project teams (Dubois & Gadde, 2002:629; PMI, 2013:1; Jensen *et al.*, 2016:9). The cost factor mentioned in section 3.3.2 is also a significant influencing factor in the hesitation.

Sustainability in the construction industry, as Bal *et al.* (2013:696) has articulated, entails achieving environmental objectives, as well as, delivering on social, cultural and economic improvements, in a given project context. In a study to analyse governance approaches for delivering sustainability in infrastructure projects, Arts and Faith-Ell (2012:3239) concluded that infrastructure projects have problems delivering on sustainability commitments. Arts and Faith-Ell (2012:3239) further explains the reason for this, one of them being the “lack of information transfer or follow-up from planning phase to project execution”.

The settings for this study is the construction firm (contractor), characterised in section 3.2.3. Given what Arts and Faith-Ell (2012:3239) provides as one of the reasons for the failure of infrastructure projects to deliver on sustainability commitments (above), it should be understood that the construction contractors are brought in when all project planning is completed, engineered, costed and budgeted for. Hence, the construction firms, such as has been used in this study, cannot be expected to deliver on sustainability intentions of infrastructure projects, unless this has been built into their contractual agreements by the project promoters and sponsors - and followed up (Arts & Faith-Ell, 2012:3249; Jensen *et al.*, 2016:8). This perspective forms a significant part of understanding sustainability from the construction industry perspective.

Interestingly, in certain instances, some construction project promoters or owners are choosing those construction contractors which have formal ISO 14001-EMSs (validated by third parties) over those that do not (Turk, 2009:559; Rodriguez *et al.*, 2011:1858). This motivates construction firms to adopt the ISO 14001-based EMS so they can earn some competitive advantage, which, in turn, promotes symbolic EMS implementation, a drawback identified with the 1996 and 2004 versions of the ISO 14001 EMS (Turk, 2009:559; Rodriguez *et al.*, 2011:1858).

Lastly, as Bresnen and Marshall (2001:335) has argued, the business management processes within the construction industry organisations are not necessarily different from those encountered in other industries. Drawing on Bresnen and Marshall (2001:335), the construction industry organisations should not be treated in any special way with regard to ISO 14001. The only difference is in the organisational factors or “**context**”, articulated in section 3.3.1, the crux of this research, which is now unpacked next (Yin & Schmeidler, 2009:482; Heras-Saizarbitoria & Boiral, 2013:59; Hartel & O’Connor, 2014:419; Fonseca, 2015:41; Harvey *et al.*, 2015:48; Arimura *et al.*, 2016:565; Leehane, 2016:6; Boiral *et al.*, 2017:21).

### **3.4 Understanding context of the organisation (clause 4 of the ISO 14001:2015 standard)**

#### *3.4.1 Introduction - understanding context*

The ISO 14001 standard (in clause 4) requires organisations to determine the “context of the organisation” when establishing the EMS (ISO, 2015a). According to ISO (2015a), the “*context of the organisation*” is constituted by:

- Internal and external organisational issues, as well as, the needs and expectations of interested parties which are relevant to the achievement of intended environmental management system (EMS) outcomes.
- The extent or *scope* to which organisational issues and the needs or expectations of interested parties will be covered in the EMS.

The determination of the context of the organisation is the early part of the planning process (Bryson *et al.*, 1990:183; ISO, 2015a). In order to achieve the desired outcomes, the rest of the planning activities must be tailored to that particular context within which the intervention is to be pursued, as Bryson *et al.* (1990:183) highlights. ISO (2015a) looks at “context of the organisation” as “a high-level, conceptual understanding of the important external and internal organisational issues that can affect (positively or negatively) the way the organisation executes its responsibilities in pursuit of its business objectives”. The term “context” is, itself, an abstract and quite a slippery concept to grasp, which lends itself to a myriad of definitions and presentations, depending on practical needs and philosophical orientation (McCormac *et al.*, 2002:94; Johns, 2006:387; Mezzi & Benblidia, 2017:28). For instance, the Cambridge Advanced Learner’s English Dictionary (2013:326) has three meanings of “context” – of which the most relevant to this study is “the situation within which something exists or happens and that can help explain it”. Context is, thus, about providing meaning or perspective for correct interpretation of phenomena (Rousseau & Fried, 2001:2; Hartel & O’Connor, 2014:418; Mezzi & Benblidia, 2017:28).

In addition, there is general convergence of views on the fact that “context”, which is an organisation-specific phenomenon, is the main reason the same intervention deployed to different organisations yields different results (Hartel & O’Connor, 2014:419; Harvey *et al.*, 2015:48; Leehane, 2016:6). Therefore, the better the understanding of the organisational or EMS context, the more likely it is that the correct strategy will be deployed and the more the outcomes are likely to be achieved, as desired (ISO, 2015d).

The ISO 14001 standard, as indicated earlier, is an environmental management tool with the primary aim to contribute to the goal of sustainability (Fonseca, 2015:40; Leehane, 2016:8; ISO, 2015a). Since the term “sustainability” can mean different things to different constituencies (Marshall & Brown, 2003:101; Marshall & Toffel, 2005:673; Barrow, 2006:340; Whitemore, 2006:313; Johnston *et al.*, 2007:60; Fonseca, 2015:38; Ramsey, 2015:1076), it has to be presented within a given context (Johnston *et al.*, 2007:61; Pojasek, 2013:81; Ramsey, 2015:1076). Drawing on Johnston *et al.* (2007:61), Pojasek (2013:81), Ramsey (2015:1085) and others, determining the context of the organisation when setting up the EMS, as stipulated in the ISO 14001 standard (ISO, 2015a), equates to establishing the context for sustainability within that specific organisation.

As outlined above, the ISO 14001 standard sees the dimensions of “context of the organisation”, as organisational issues (external and internal) and the stakeholder relationships, including the scope of the EMS. These concepts are explored in more detail in the subsequent sections.

### *3.4.2 External and internal organisational issues*

Much of the literature reviewed characterises context as external and internal organisational issues. In this study, the use of context in this way is avoided to reduce confusion with “context of the organisation” (the focal point of this study), which encompasses stakeholder relationships. External and internal issues arise from the fact that organisations conduct their businesses within a framework or within an environment that is broader than the organisations themselves (Johnson *et al.*, 2008:13; Freeman *et al.*, 2010:105; Jofre, 2011:10; PMI, 2013:19; Pojasek, 2013:82). Organisational issues (external and internal) are important topics for the organisation, problems for debate and discussion or changing circumstances that can affect the organisation’s ability to achieve the intended business outcomes (Pojasek, 2013:84; ISO, 2015a; ISO, 2015d).

The organisations are affected, and they themselves affect this environment in which they operate, in different ways, depending on the nature of the business (Bansal & Bogner, 2002:276; Johnson *et al.*, 2008:13; Zailani *et al.*, 2012; Pojasek, 2013:82). Jofre (2011:10) and Pojasek (2013:82) highlight that organisations are founded by people who desire to achieve a specific purpose and are open systems of activities which are interconnected with the environment beyond their boundaries. These organisational environments are complex, dynamic and interdependent (Johns, 2006:387; Johnson *et al.*, 2008:13; Jofre, 2011:14).

The environment in which organisations operate, as articulated by Johnson *et al.* (2008:54), can be a source of survival and great opportunity. It has been widely noted in literature that understanding this broader framework is crucial to aligning the organisation's activities with organisational goals (O'Leary & Almond, 2009:497; ISO, 2009a; Johnson *et al.*, 2008:57; ISO, 2010; Pojasek, 2013:84; PMI, 2013; Hartel & O'Connor, 2014:421; ISO, 2015a; LRQA, 2017). As an extension of the foregoing, the intended outcomes of the organisation's EMS must be taken into account when determining external and internal organisational issues (ISO, 2015a). Intended outcomes, in terms of ISO (2015a), are what the organisation wants to achieve by establishing the EMS. ISO (2015a) stipulates the minimum requirements as: "enhancement of environmental performance; fulfilment of compliance obligations; achievement of environmental objectives, and protection of the environment".

There is no "template" or a universally accepted method for determining organisational issues and thus, can be presented in many different ways (Griffin, 2007:860; Mezzi & Benblidia 2017:28). However, external organisational issues relate to the external environment and the internal organisational issues have something to do with organisational factors, such as, internal processes, internal systems and issues relating to staff (Rousseau & Fried, 2001:8; Johnson *et al.*, 2008:56; Jofre, 2011:13). The external organisational issues are outside the control of the organisation (Freeman *et al.*, 2010:105; Galeazzo & Klassen, 2015:159; LRQA, 2017). The *political, economic, sociological, technological, legal and environmental* (PESTLE) framework provides sufficient dimensions for characterising external influences on the organisation (Johnson *et al.*, 2008; ISO, 2015d; Louw & Venter, 2017; LRQA, 2017). Dimensions for internal issues, as outlined by ISO (2015a) and ISO (2015d) are *the organisation's activities; products and services; strategic direction; culture and capabilities* (i.e. people, knowledge, processes and systems).

As mentioned earlier, the dimensions for defining organisational issues are not entirely independent of each other, as interactions are evident, with factors in one dimension influencing factors in other dimensions (Johnson *et al.*, 2008:56; Hartel & O'Connor, 2014:419; Iatridis & Kesidou, 2016:15; Mezzi & Benblidia, 2017:28). These interactions are also occurring at different levels (*intra-organisational level, organisational level and inter-organisational level*), as outlined by Jofre (2011:13). When determining organisational issues, a cross-functional participatory approach is recommended, with participants or stakeholders in such a process who are familiar with the internal organisational processes and strategic motives (Johnson *et al.*, 2008:57; Roberts, 2016:9).

Just as organisations exist and operate within an environment that is broader than themselves, as seen above, it should be stated here that the organisational issues, too, do not exist in a “vacuum”. This study uses the foregoing to promote the idea that organisational issues should be linked to stakeholders, as suggested by Bryson *et al.* (1990:184), Pacheco and Garcia (2012:2177) and Ward and Chapman (2008:571). From this perspective, organisational issues, appear to be transformed into stakeholder issues, which are explored more in the next section.

### 3.4.3 *Interested parties (stakeholders)*

#### 3.4.3.1 Introduction

As already mentioned in section 3.4.2, organisations conduct their business (including execution of projects) within an environment that is broader than the organisations themselves (Johnson *et al.*, 2008:13; Freeman *et al.*, 2010:151; Jofre, 2011:10; PMI, 2013:19; Pojasek, 2013:82). In addition, organisations depend on other organisations or individuals or groups of individuals for their survival (Mitchell *et al.*, 1997:863; Friedman & Miles, 2006:10; Greenwood, 2007:318; Ackermann & Eden, 2011; Mainardes *et al.*, 2011:229; Banks *et al.*, 2016). With respect to the foregoing view, the organisations and the other organisations or individuals or groups of individuals can be considered to be interconnected or interdependent. These individuals, groups of individuals or organisations are collectively termed “interested parties” or “interested and affected parties” or “stakeholders”, according to Mitchell *et al.* (1997:858), IFC (2007:10), ISO (2009a) and ISO (2010). The terms “interested and affected parties”, “interested parties” and “stakeholders” are used interchangeably in this study (ISO, 2009a; DNV-GL, 2015; ISO, 2015a).

The stakeholder concept has been around for a very long time within the business management realm (Freeman, 1884; Agle *et al.*, 1999:507; Preble, 2005:407; Friedman & Miles, 2006:1; Reed, 2008:2418). However, there has not been any universal agreement in literature on the definition of “stakeholder” (Donaldson & Preston, 1995:66; Friedman & Miles, 2006:4; Reed *et al.*, 2009:1934; Mainardes *et al.*, 2011:237). In spite of the extant divergent views on the definition, the term “stakeholder” has been extensively used in literature, both in academic circles and practice, also for a very long time (Friedman & Miles, 2006:3; Mainardes *et al.*, 2011:228; Harrison & Wicks, 2013:97).

In fact, a number of researchers have extensively articulated that successful organisations are those that systematically identify and effectively address the needs or concerns of stakeholders (Wheeler *et al.*, 2003:19; Bryson, 2004:23; Reed *et al.*, 2009:1936; Freeman *et al.*, 2010:159; Ackermann & Eden, 2011:180; Bryson *et al.*, 2011:2; Harrison & Wicks, 2013:97; Walker & Laplume, 2014:156; Banks *et al.*, 2016:26). This is mainly because organisations are more likely to deal with the concerns of stakeholders when they perceive that doing so will enhance their chances of meeting their intended business outcomes (Donaldson & Preston, 1995:78; Mitchell *et al.*, 1997:863; Bryson, 2004:25; Preble, 2005:412; Mainardes *et al.*, 2011:234; Harrison & Wicks, 2013:98).

Stakeholders may, or may not, be actively involved in the company or project and may have needs, interests or concerns or expectations which may be affected, positively or negatively, by the company or project (Mitchell *et al.*, 1997:856; ISO, 2010; Roberts, 2016:9). Stakeholders may have interests or expectations in the organisation or project even when the organisation or project has no reciprocal interest in the stakeholders (Donaldson & Preston, 1995:67; Friedman & Miles, 2006:8; ISO, 2010). Yet still, as highlighted by ISO (2010), some stakeholders may even be oblivious to the ways in which they may be affected by the organisations’ activities.

Some of the needs and concerns of stakeholders are not necessarily requirements of the organisation, company or project (Ackermann & Eden, 2011:190; ISO, 2015a). Stakeholder interests, needs and expectations can also be wildly divergent (IFC, 2007:11; Reed *et al.*, 2009:1935; Ackermann & Eden, 2011:186; Harrison & Wicks, 2013:102). The needs and expectations of stakeholders can change over time or when their circumstances change (Agle *et al.*, 1999:508; IFC, 2007:16; Reed *et al.*, 2009:1935). Stakeholder interests, needs or expectations are also interconnected or linked to the complex and dynamic external and internal organisational issues (Ward & Chapman, 2008:571; Reed *et al.*, 2009:1946; Pacheco & Garcia, 2012:2177).



Like external and internal organisational issues (in section 3.4.2), the identification of stakeholders and their needs or expectations is a high-level issue to be handled by top leadership in organisations as part of the strategic management processes (Donaldson & Preston, 1995:87; Mitchell *et al.*, 1997:863; Johnson *et al.*, 2008:22; Reed *et al.*, 2009:1936; Ackermann & Eden, 2011:180; Mainardes *et al.*, 2011:230; LRQA, 2017). The identification of stakeholders and their needs or expectations, as well as, understanding their potential influence on the organisation's intended outcomes or purpose is referred to as "stakeholder analysis" (Johnson *et al.*, 2008:133; Reed *et al.*, 2009:1933). Given that there is no universal agreement on the definition of "stakeholder", as outlined by Donaldson & Preston (1995:66), Friedman and Miles (2006:4), Reed *et al.* (2009:1934), Mainardes *et al.* (2011:237) and many others, it should be noted that "stakeholder analysis" can mean different things in different circumstances (Reed *et al.*, 2009:1933).

As already mentioned, the needs and expectations of stakeholders are dynamic (Agle *et al.*, 1999:508; IFC, 2007:16; Reed *et al.*, 2009:1935). In addition, stakeholder issues are interconnected or linked to the complex and dynamic organisational issues (Ward & Chapman, 2008:571; Reed *et al.*, 2009:1946; Pacheco and Garcia, 2012:2177). When conducting stakeholder analysis and designing the stakeholder engagement strategies, the purpose for initiating the stakeholder process and the legal requirements relating to specific stakeholders must be taken into account, as the legal dimension can add to the legitimacy of the stakeholder concerns, as highlighted by Mitchell *et al.* (1997:882) Driscoll and Starik (2004:58) and Friedman and Miles (2006:223). The legal perspectives for stakeholder analysis and engagement are explored in the next section.

#### 3.4.3.2 Legal requirements for engagement of interested parties

Globally, in many instances, such as in decisions on public policy, stakeholders (citizens) have a legal right to have a say in how they think such policy might affect them (Friedman & Miles, 2006:250; Mathur *et al.*, 2008:601; Reed, 2008:2426). Furthermore, some stakeholders, like labour unions and employees, enjoy legal protection, mainly in terms of country and international labour laws (Friedman & Miles, 2006:250). In addition, public participation is a globally standardised and legalised process step in environmental impact assessments (EIAs), which are conducted prior to executing development projects (South Africa, 1998; Sadler, 1996; Glasson *et al.*, 2005). Some of the stakeholders identified during the EIA process (the planning phase of the project life cycle) may be carried over to the construction phase. As mentioned in section 3.4.3.2, legal requirements for stakeholder analysis must be understood prior to identifying stakeholders.

### 3.4.3.3 Identification of interested parties

In spite of the paucity of universal agreement on what “stakeholder” means, the term has extensively been used in literature, in both academic circles and practice (Friedman & Miles, 2006:3; Mainardes *et al.*, 2011:228; Harrison & Wicks, 2013:97). In fact, the Freeman (1984) definition has been cited the most, according what prominent researchers on the matter have indicated (e.g. Mitchell *et al.*, 1997:862; Agle *et al.*, 1999:508; Friedman & Miles, 2006:19; Greenwood, 2007:321; Kamann, 2007:128). Freeman (1984:46) defines stakeholder as:

“any group or individual who can affect or is affected by the achievement of organisation objectives”

The Freeman (1984) definition of stakeholder has been criticized for being too broad (or all-inclusive), with the danger that one can end up with a limitless number of stakeholders (Mitchell *et al.*, 1997: 862; Agle *et al.*, 1999:508; Preble, 2005:409). This study terms ending up with a countless number of stakeholders the “Freeman effect”.

In addition, some researchers have been promoting the view that the natural environment should be accorded stakeholder status on the grounds that the natural environment is affected by the organisations activities, and that the natural environment can also affect the organisation (Starik, 1995; Driscoll & Starik, 2004; Norton, 2007; Haigh & Griffiths, 2009; Onkila, 2011; Waddock, 2012). However, others, like Phillips & Reichart (2000:185), have argued against this view. Phillips & Reichart (2000:185) actually dismissed this notion, saying that the environment is taken care of via the “*fairness-based approach through legitimate organisational stakeholders*”. Even though this debate is still open, the available stakeholder processes seem to suggest that those arguing against the natural environment being accorded stakeholder status are having their way (Walker & Laplume, 2014:156).

Given that there is no universal agreement on the definition of “*stakeholder*”, as already highlighted (Donaldson & Preston, 1995:66; Friedman & Miles, 2006:4; Mainardes *et al.*, 2011:237), “stakeholder analysis” can mean different things in different circumstances (Reed *et al.*, 2009:1933). Therefore, prior to conducting stakeholder analyses or collection of stakeholder information, the background or phenomenon motivating the launch of the stakeholder process must be clearly understood (DEAT, 2002:2; Bryson, 2004:27; Ward & Chapman, 2008:564; Reed *et al.*, 2009:1933; Ackermann & Eden, 2011:180; Mainardes *et al.*, 2011:231; Colvin *et al.*, 2016:272). As outlined by Bryson (2004:27), Ward and Chapman (2008:564) and Reed *et al.* (2009:1937), the motivation for initiating the stakeholder process will also influence the choice of stakeholder analysis methods used.

Several approaches can be used for stakeholder identification (Mitchell *et al.*, 1997; DEAT, 2002; Bryson, 2004; Greenwood, 2007; IFC, 2007; Kamann, 2007; Johnson *et al.*, 2008; Ward & Chapman, 2008; Reed *et al.*, 2009; Bourne, 2010; ISO, 2010, Ackermann & Eden, 2011; Mainardes *et al.*, 2012; Pacheco & Garcia, 2012; Bal *et al.*, 2013; Colvin *et al.*, 2016). The effectiveness of the stakeholder identification methods used depends on the techniques selected under the prevailing circumstances (DEAT, 2002:2; Bryson, 2004:46; Kamann, 2007:135; Ward & Chapman, 2008:564; Reed *et al.*, 2009:1933; Ackermann & Eden, 2011:180; Mainardes *et al.*, 2011:231).

The stakeholder identification is the first step in the stakeholder analysis, and it is a process to identify who will be affected by the organisation's activities or who can affect the organisation (IFC, 2007:13; Reed *et al.*, 2009:1836; Roberts, 2016:9). Stakeholder analysis should involve cross functional participation approach (IFC, 2007:13; Reed *et al.*, 2009:1836; Roberts, 2016:9). Colvin *et al.* (2016:272) describes stakeholder identification as both an art and a science. As a science, requiring the use of existing knowledge and networks (DEAT, 2002:15; Bryson, 2004:27; Reed *et al.*, 2009:1936; Colvin *et al.*, 2016:272) and determining the scope in terms of geographic reach, interests and influences (Colvin *et al.*, 2016:272). As an art, stakeholder identification processes make use of intuition and past experiences (Colvin *et al.*, 2016:272). Colvin *et al.* (2016:272) discourages the use of intuition and past experiences, saying that, since these rely on individual intuition and experiences, they take that knowledge and capability with them when they leave the organisation. The use of the "scientific" approach is supported more by extant literature (DEAT, 2002:15; Bryson, 2004:27; Reed *et al.*, 2009:1936; Colvin *et al.*, 2016:272).

As a consequence of the support for the "scientific" approach (DEAT, 2002:15; Bryson, 2004:27; Reed *et al.*, 2009:1936; Colvin *et al.*, 2016:272), the stakeholder identification should be conducted in brainstorm session or workshop format (DEAT, 2002:15; IFC, 2007:13; Johnson *et al.*, 2008:57; Reed *et al.*, 2009:1936; Ackermann & Eden, 2011:182). The participants in the stakeholder analysis process should be those with relevant information and knowledge (Bryson, 2004:27; IFC, 2007:13; Reed *et al.*, 2009:1836; Colvin *et al.*, 2016:273; Roberts, 2016:9). Bryson *et al.* (2011:1) stresses that the broader, more inclusive definition of stakeholder should be used in the beginning to ensure a wider range of stakeholder issues are scoped in before narrowing down to those that are more relevant for the achievement of intended results.

The use of pre-determined or pre-conceived stakeholder groups (categories) to identify or characterise stakeholders is strongly discouraged to avoid the unintentional exclusion of the "not-so-obvious" stakeholders (Reed *et al.*, 2009:1937; Colvin *et al.*, 2016:267). Reed *et al.* (2009:1937) stresses that stakeholder categories must only be determined after their needs and expectations have been identified.

#### 3.4.3.4 Classification of interested parties

It has been mentioned in section 3.4.3.1 that there are numerous definitions of stakeholders in literature and that the Freeman (1984) definition is the most widely cited (Mitchell *et al.*, 1997:862; Agle *et al.*, 1999:508; Friedman & Miles, 2006:19; Greenwood, 2007:321; Kamann, 2007:128). The Freeman (1984) definition has also been criticized for being too broad, which creates the difficulty, in practice that an infinite number of stakeholders can be pulled in (Mitchell *et al.*, 1997:862; Agle *et al.*, 1999:508), termed the “Freeman effect”. It is, therefore, important to have some sort of filtering step (establishing boundaries) in the stakeholder analysis process to prevent the “Freeman effect”, which is the essence of stakeholder classification (Mitchell *et al.*, 1997:862; ISO, 2010; Mainardes *et al.*, 2011:231).

Stakeholder classification assists in identifying priority or salient stakeholder concerns so that they can occupy “front-row” positions in organisational decision-making processes (Greenwood, 2007:318; IFC, 2007:16; Reed *et al.*, 2009:1933; ISO, 2010; Eskerod *et al.*, 2015:44). Stakeholder classification seeks to determine how stakeholders will be affected or how they can affect the organisation and to what extent (IFC, 2007:13; ISO, 2010; Mainardes *et al.*, 2012:1861). The methods of classifying stakeholders may be used in isolation or in combination, again, depending on the purpose of the classification (Reed *et al.*, 2009:1936; Colvin *et al.*, 2016:269).

There is no “template” for stakeholder classification, thus can be done and presented in many different ways, depending on the purpose (Bryson, 2004:27; Ward & Chapman, 2008:564; Reed *et al.*, 2009:1937; Colvin *et al.*, 2016:267). It is necessary to emphasize that the divergence in individual stakeholder interests, needs and expectations still exists within the categories the stakeholders are classified in (Ward & Chapman, 2008:571; Walker & Laplume, 2014:152; Colvin *et al.*, 2016:275). In addition, the stakeholder categorisation is not static, and one stakeholder can belong to a multitude of classes or can move from one category to another (Mitchell *et al.*, 1997:879; Mainardes *et al.*, 2012:1865). Reed *et al.* (2009:1937) and Colvin *et al.* (2016:267) discourage the use of pre-determined or pre-conceived categories to characterise stakeholders. The most common stakeholder classification methods are displayed in this section.

One of the ways is to characterise stakeholders as “*primary*” or “*secondary*”, with primary stakeholders being those the organisation has formal relationships with (contracts or agreements or permits/licences/authorisations), such as clients, suppliers, employees, regulatory authorities, shareholders – without whom the firms cannot survive (Preble, 2005:410; Friedman & Miles, 2006:14; Bremmers *et al.*, 2007:216; Mainardes *et al.*, 2011:231; Eskerod *et al.*, 2015:44; Benn *et al.*, 2016:2). Secondary stakeholders represent those without formal agreements or contracts, such as government authorities or members of community or the general public and are influential though not critical for organisational survival (Preble, 2005:410; Friedman & Miles, 2006:14; Bremmers *et al.*, 2007:216; Mainardes *et al.*, 2011:231; Eskerod *et al.*, 2015:44; Benn *et al.*, 2016:3). Bremmers *et al.* (2007:216) notes that some stakeholders, such as government, can be classified as either a primary or secondary stakeholder or both. It should be noted that some stakeholders may also have overlapping interests, needs or expectations (Friedman & Miles, 2006:86; Harrison & Wicks, 2013:103).

Secondly, stakeholders may be either “external” or “internal” entities to the organisation (Freeman *et al.*, 2010:24; ISO, 2015a). These external or internal stakeholders may further be categorised into: “*customers or clients; communities or general public; suppliers or service providers or contractors; regulatory authorities; non-governmental organisations; shareholders (current); investors (potential shareholders); employees; competitors*” (Friedman & Miles, 2006:13; Freeman *et al.*, 2010:24; ISO, 2015a).

Ward & Chapman (2008:571) comes in with the attribute “*position*” or “*attitude*” towards the organisation or project and distinguishes five levels, namely: “*active opposition*”, “*passive opposition*”, “*not committed*”, “*passive support*” and “*active support*”. The other characterisation can be done in terms of the geographical locations of stakeholders (Colvin *et al.*, 2016:269). Stakeholders may also be categorised according to their needs and expectations or in terms of the way they are affected or affect the organisation (IFC, 2007:15).

Mitchell *et al.* (1997) puts forward the following salience attributes for characterising the stakeholders:

- “*Power*” as “*the probability that one actor within a social relationship would be in a position to carry out his own will despite resistance*” (Mitchell *et al.*, 1997:865).
- “*Legitimacy*” as “*loosely referring to socially accepted and expected structures or behaviours, often is coupled implicitly with that of power when people attempt to evaluate the nature of relationships in society*” (Mitchell *et al.*, 1997:866) supported by Agle *et al.* (1999:508). Legitimacy may also be seen as relating to genuine ownership by the stakeholders of concerns at hand.

- “Urgency” as the issues requiring “immediate attention” to promote the idea that stakeholder issues are dynamic (Mitchell *et al.*, 1997:867). Friedman and Miles (2006:95) and Agle *et al.* (1999:508) supports this, saying urgency is required so as to prioritise the execution of management actions.

Mainardes *et al.* (2012:1867) highlights limitations of the stakeholder salience model by Mitchell *et al.* (1997), singling out the “lack of a scale for determining whether or not a stakeholder effectively does have power and/or legitimacy and/or urgency” as the most important drawback.

Stakeholders may also be classified on the basis of the “power” and “interest”: their power to influence the organisations and on the level of interest or enthusiasm (or drive) they manifest to push the organisations to address their needs and expectations (Johnson *et al.*, 2008:156; Ward & Chapman, 2008:571). Both “power” and “interest” can be rated as “high” or “low” (Johnson *et al.*, 2008:156; Ward & Chapman, 2008:571). Accordingly, four different power/interest combinations are possible, as follows: “high interest - high power”, termed “key players”; “low interest- high power”, termed “context setters”; “high interest – low power”, labelled “subjects”; and “low interest – low power”, labelled “crowd” (Johnson *et al.*, 2008:157; Ward & Chapman, 2008:571; Reed *et al.*, 2009:1938; Ackermann & Eden, 2011:183).

The stakeholder attribute - “power”, is considered the most critical aspect for characterising stakeholder salience or prominence (Mitchell *et al.*, 1997:863; Friedman & Miles, 2006:14; Ackermann & Eden, 2011:183; Mainardes *et al.*, 2011:236). The use of the Power/Interest Grid depicted in Figure 3-4 to characterise stakeholder salience or prominence is regarded as the most popular (Reed *et al.*, 2009:1938; Ackermann & Eden, 2011:183). Stakeholders can be mapped anywhere on the grid (Reed *et al.*, 2009:1938; Ackermann & Eden, 2011:185).

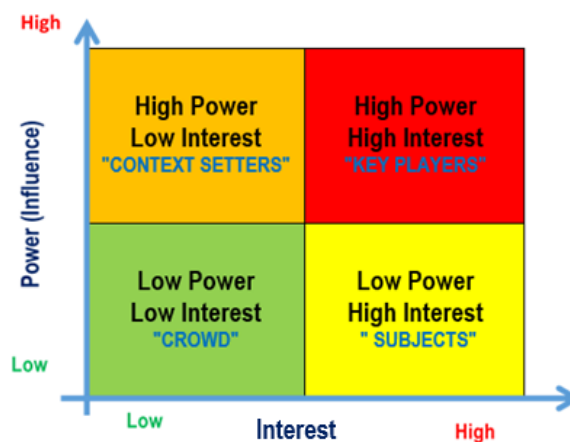


Figure 3-4: Power/ Interest Matrix

(Source: Ackermann & Eden, 2011:183)

One of the reasons for the popularity of the power/interest matrix is what Reed *et al.* (2009:1938) brings out, that it helps with pointing out how to proceed in the subsequent step (the stakeholder engagement itself), as shown in Figure 3-5 below.

High Priority	Stakeholder Position on Matrix	Stakeholder Category Descriptor	Recommended Method of Engagement
1	High Power/ High Interest	Stakeholders who stand to lose or gain significantly from the company or project and whose actions can affect the company or project's ability to meet its objectives	Key Players/ Engage Closely
2	High Power/ Low Interest	Stakeholders who do not stand to lose or gain much from the company or project, but whose actions can affect the company or project's ability to meet its objectives.	Raise Awareness to develop more interest and convert them to Key Players/ Meet their needs and keep them satisfied
3	Low Power/ High Interest	Stakeholders who stand to lose or gain significantly from the company or project, but whose actions cannot affect the company or project's ability to meet its objectives	Show Consideration/ Keep them Informed/ Neutralise or Empower them to become Key Players
4	Low Power/ Low Interest	Stakeholders who do not stand to lose or gain much from the company or project and whose actions cannot affect the company or project's ability to meet its objectives	Potential Stakeholders/ Monitor and Review/ Not Worth Management Time or Effort
Low Priority			

Figure 3-5: Stakeholder engagement guide

(Source: Ackermann & Eden, 2011:183)

As shown in Figure 3-5 above, stakeholders characterised as possessing high power and high interest (key players), for instance, represent the class of stakeholders who stand to lose or gain significantly from the organisation and whose actions can similarly affect the organisation's ability to meet its intended objectives and therefore, should be engaged closely (Ackermann & Eden, 2011:183). On the other hand, as seen Figure 3-5 above, stakeholders with low power and low interest (crowd) are a class of stakeholders who do not stand to lose or gain much from the company or project and whose actions cannot affect the company or project's ability to meet its objectives and are thus not worth much management time or effort (Ackermann & Eden, 2011:183).

The next section pertains to stakeholder engagement. Although this mini-dissertation focuses on context of the organisation (clause 4 of the ISO 14001 standard), wherein the actual engagement of stakeholders is outside the study scope (ISO, 2015a), a few ideas on engagement that must be borne in mind during the stakeholder analysis process are introduced. In fact, stakeholder analysis in itself would be meaningless, unless the outputs are effectively incorporated into organisations' management decisions and actions (Reed *et al.*, 2009:1947; ISO, 2010; ISO, 2015a). In addition, the process of actually identifying stakeholders and their expectations (in workshop format with participants who understand the organisation and the business environment) which forms part of this study, is itself, also largely a form of stakeholder engagement (Reed *et al.*, 2009:1936; Roberts, 2016:9). The guidelines in Figure 3-5 above, for engaging stakeholders, based on the way they have been characterised (in terms of their power and interest) should be taken into consideration during stakeholder interactions.

#### 3.4.3.5 Engagement of interested parties

As stated earlier, the motivations for initiating the stakeholder management process will influence the stakeholder analysis and engagement methods (Bryson, 2004:27, Ward & Chapman, 2008:564; Reed *et al.*, 2009:1937). For instance, project sponsors may be intending to increase the sense of ownership of the project (Mathur *et al.*, 2008:602), or to obtain the *social licence to operate* (Prno & Slocombe, 2012:346) when they initiate the stakeholder process. In other cases, private firms may be trying to analyse stakeholder needs mainly for them to increase market share and competitiveness (Mathur *et al.*, 2008:602).

Dealing with stakeholder issues entails understanding the influences exerted on organisations by stakeholders and the organisations' influences on stakeholders, on one hand, and the organisations' responses to these influences, on the other (ISO, 2010; Mainardes *et al.*, 2011:234). Good practice demands doing so in a proactive manner (DEAT, 2002:12; IFC, 2007:5; ISO, 2010; ISO, 2015a). Stakeholder management can be effective only if it is conducted across the entire organisation and not just by specific managers (Ackermann & Eden, 2011:180). Stakeholder engagement must be initiated at the earliest opportunity (IFC, 2007:5; Reed, 2008:2422).

In their engagement strategies, organisations must keep in mind the dynamic nature of stakeholder salience, their needs and expectations (Agle *et al.*, 1999:508; IFC, 2007:16). Stakeholder analysis and engagement should, thus, incorporate on-going and adaptive involvement of stakeholders at every stage of the project cycle or throughout the organisation's change effort or intervention cycle (IFC, 2007:100; Reed *et al.*, 2009:1937; Bal, 2014:39).



It is also important to note that the stakeholders can be engaged by an organisation or different organisations in different capacities and on different issues and at different times (Mathur *et al.*, 2008:603; IFC, 2007:16). The outcomes from the stakeholder engagement must yield mutual value for all parties involved and must be communicated in a credible way (Reed *et al.*, 2009:1940). Engagement, must also be fair, otherwise the dominant party is viewed as “manipulative” (Greenwood, 2007:318).

The engagement strategies must take into account the needs and expectations of the vulnerable stakeholders, such as, the under-privileged or the economically and socially disadvantaged, including the voiceless children, as well as, those stakeholders that may not be part of organised groups, (Reed *et al.*, 2009:1939; ISO, 2010; Mainardes *et al.*, 2012:1864). In addition, during multi-partite (multi-stakeholder) meetings, the views of key stakeholders reluctant to engage must be included in the deliberations (ISO, 2010).

Organisations must also remember to engage all relevant stakeholders at various levels and that “materiality” (the relevance and significance or salience of an issue to a stakeholder and the organisation) is specific to stakeholders, whereby, some issues that may be important to some stakeholders may not be so to others (Donaldson & Preston, 1995:68; Mitchell *et al.*, 1997:863; ISO, 2010; Ackermann & Eden, 2011:186). Eskerod *et al.* (2015:45) stresses that while all stakeholders have a right to receive management attention, organisations must balance the level of engagement with the stakeholder interest and power, to avoid raising unnecessary expectations and to ensure the focus on those stakeholders important for organisational survival is not diluted. The form of engagement must be appropriate for specific cultural settings and must take into account gender sensitivities (IFC, 2007). In addition, Eskerod *et al.* (2015:45) urges organisations to always adopt a win-win approach to the engagement and not engage stakeholders in the same manner the organisation perceives them.

#### 3.4.3.6 Challenges of engagement of interested parties

Stakeholder analyses and engagement can be quite a daunting task for organisations (Wolfe & Putler, 2002:64; Ackermann & Eden, 2011:182). Some of the key challenges are summarised below, in no order of importance. Firstly, stakeholder analyses and engagement processes are inevitably complex and time-consuming (Bryson, 2004:27; Preble, 2005:419; Prno, 2013:586). Secondly, stakeholders to organisations or projects could be numerous, with very divergent needs and expectations (IFC, 2007:11; Reed *et al.*, 2009:1935; Ackermann & Eden, 2011:186; Harrison & Wicks, 2013:102). These stakeholder needs and expectations are also dynamic (subject to change) and not always aligned with organisational objectives (Mitchell *et al.*, 1997:862; Reed *et al.*, 2009:1935; Bourne, 2010:19; Ackermann & Eden, 2011:181).

The divergence in stakeholder needs and expectations easily leads to mistrust during engagement. In the post-Apartheid South African case, specifically, honest and genuine engagement in all cases is still elusive, according to DEAT, (2002:17).

Thirdly, some stakeholders who possess power tend to be too demanding in certain instances, which results in the unintentional neglect of other equally important stakeholder issues (Reed *et al.*, 2009:1937; Bourne, 2010:19). At stake in this scenario, are the vulnerable stakeholders, such as, the under-privileged or the economically and socially disadvantaged, including the voiceless children (Reed *et al.*, 2009:1939; ISO, 2010; Mainardes *et al.*, 2012:1864). In other cases, mistrust also builds up when the less powerful stakeholders fear they might be pushed into accepting “dodgy consensuses” during the engagements (DEAT, 2002:17).

Fourthly, time constraints associated with construction project delivery deadlines, inherently create a sense of urgency, with too little time to deal with stakeholder issues in a comprehensive manner (DEAT, 2002:17; Bourne, 2010:19). The next challenge is that, even though effective stakeholder engagement has been positively linked to good organisational performance (measured in financial terms), there are still no reliable techniques for measuring the effectiveness of stakeholder engagement (Darnall *et al.*, 2010:1072). In addition, just as there are numerous definitions of “stakeholder” (Donaldson & Preston, 1995:66; Friedman & Miles, 2006:4; Reed *et al.*, 2009:1934; Mainardes *et al.*, 2011:237), there are also some practical problems in choosing appropriate stakeholder analysis and engagement approaches to adopt in a given situation, from the myriad of available methods (DEAT, 2002:17).

Lastly, DEAT (2002:17) highlights that in many countries globally, even though stakeholders (citizens) have a legal right to have a say in how they think policy decisions might affect them, this is limited and leads to confusion or disillusionment and it may be used just as a “tick-box” exercise, which may, in turn, diminish the interest of other stakeholders. Reed (2008:2426) calls for stakeholder involvement to be legalized more, nonetheless.

#### 3.4.4 Compliance obligations and EMS scope

As part of understanding context of the organisation, clause 4 of the ISO 14001:2015 standard stipulates that the organisations must determine which of the expectations of interested parties should become compliance obligations (ISO, 2015a). Compliance obligations are those issues that are relevant to the EMS or organisational requirements (ISO, 2015a). As stated in ISO (2015a), “some of the stakeholder requirements reflect the needs and expectations that are mandatory because they have been incorporated into laws, regulations, permits and licenses by governmental or even court decisions”. Compliance obligations in ISO (2015a) replaces “*legal and other requirements*” in ISO (2004). Accordingly, as sifted from literature, any stakeholder issue satisfying one or more of the requirements below is identified as part of the compliance obligations:

- Legal or mandatory requirements (Mitchell *et al.*, 1997:862; ISO, 2010; ISO, 2015a)
- Issues relating to stakeholders categorised as “*key players*” (Mitchell *et al.*, 1997:863; Reed *et al.*, 2009:1938; Ackermann & Eden, 2011:183);
- Organisational requirements relevant to the EMS (ISO, 2015a);
- Relevance to the intended outcomes (Bryson *et al.*, 1990:184; ISO, 2015a).

The ISO 14001 standard requires that organisations determine the scope of the EMS, as part of understanding context of the organisation (ISO, 2015a). Scope is the extent or limit to which internal and external issues, as well as, the needs and expectations of interested parties (and hence, compliance obligations) will be applied in the EMS (BSI, 2015:5; ISO, 2015a). The scope (span, limit or extent) is meant to describe what is to be covered or included or excluded in the EMS (Mchugh & Shaw, 2015; Bearman, 2015; ISO, 2015a). Exclusions from the EMS must be sufficiently justified (Mchugh & Shaw, 2015; Bearman, 2015; ISO, 2015a). LRQA (2017) stresses that correctly defining this scope is vital to ensuring the complete alignment of strategic environmental management objectives with overall organisational or business objectives. ISO (2015a) indicates that the credibility of the EMS resides in the manner in which the scope is defined.

Compliance obligations are constituted by issues that are both external and internal to the organisations. Organisations are understood to have better control over internal matters than external ones (Freeman *et al.*, 2010:105; Galeazzo & Klassen, 2015:159), which inherently introduces uncertainty on the part of organisations. This uncertainty is the concept that the section below explores, as it relates to compliance obligations, which are elements of context of the organisation.

### **3.5 Understanding risks and opportunities related to context**

The context of the organisation (clause 4 of the ISO 14001 standard) is closely linked to clause 6, which deals with planning to manage risks and opportunities (ISO, 2015a). Prior to identifying risks and opportunities, context, outlined in section 3.4, must first be understood (ISO, 2009a; ISO, 2015a). The first component of organisational context in terms of the ISO 14001 standard is the “external and internal organisational issues” (ISO, 2015a). Organisational issues are dynamic, complex and interconnected (Johnson *et al.*, 2008:57; Hartel & O’Connor, 2014:419). The second component is the needs and expectations of interested parties, which are also divergent and dynamic (Preble, 2005:427; IFC, 2007:2; Ward & Chapman, 2008:563; Bal *et al.*, 2013:705). In order to effectively deal with these complex and interconnected organisational issues and stakeholders expectations in a meaningful way, organisations have to balance these with their intended business objectives (Agle *et al.*, 1999:521; Bal *et al.*, 2013:695). This begs the question: *just how do organisations decide what to trade off?* The answer to this question lies in understanding what is at stake (risks and opportunities) in relation to such decisions (ISO, 2009a; ISO, 2015a). This section provides some understanding of risks and opportunities relating to context of the organisation.

Organisations are influenced by both internal and external organisational factors (IRM, 2002:2; ISO, 2009a; World Bank, 2014:12). These internal and external factors bring in uncertainty, which influences the ability of the organisations to achieve the intended objectives (IRM, 2002:2; ISO, 2009a, Purdy, 2010:882; World Bank, 2014:12; ISO, 2015a). According to ISO (2009a) and Purdy (2010:882), this uncertainty is called “risk”. The term “risk” has conventionally been used to refer to uncertainty with potentially negative consequences, and is still used as such (Purdy, 2010:882; World Bank, 2014:5; ISO, 2015b:15). When the potential consequences of uncertainty on the organisations’ intended objectives is positive, risk is referred to as “*opportunity*” (Purdy, 2010:882; World Bank, 2014:5; ISO, 2015a). Risk and opportunity are, thus, sides of the same coin (Purdy, 2010:882; World Bank, 2014:5; ISO, 2015a).

There is some risk associated with all activities of organisations (IRM, 2002:2; ISO, 2009a; PMI, 2013:310). Risks and opportunities should not only be looked at in terms of these activities, but also in terms of the stakeholders that could be affected (IRM, 2002:1; ISO, 2015a). In order for organisations to increase the possibility of achieving their objectives, the risks and opportunities must be identified, understood and managed, continuously, using a life cycle approach (IRM, 2002:2; ISO, 2009a, ISO, 2015a). Purdy (2010:882) puts this more clearly by saying that “managing risk is, quite simply, a process of optimisation that makes the achievement of objectives more likely”. The life cycle approach entails identifying and addressing the risks and opportunities of the organisations’ past, present and future activities (IRM, 2002:2; ISO, 2015a).

The risk management process is depicted in Figure 3-6. The risk management process is a very iterative and consultative one, as can be seen in Figure 3-6 (ISO, 2015b:14). In the risk management process shown in Figure 3-6, risk implies both “risk” and “opportunity” (Raz & Hillson, 2005:61; ISO, 2009a; ISO, 2015b:14).

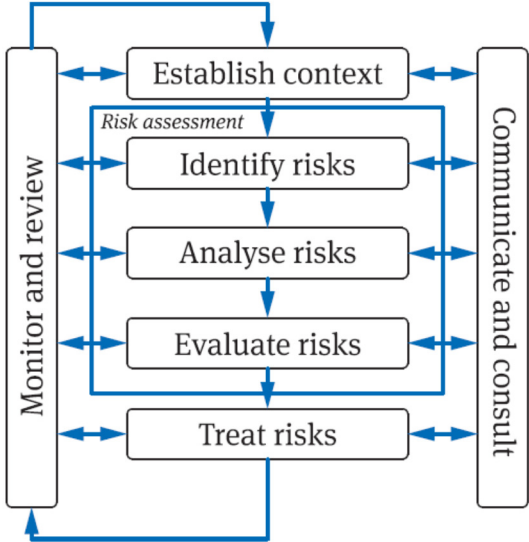


Figure 3-6: Risk management process

Source: ISO, 2009a; ISO, 2015b

In a comparative review of major standards for risk management, with respect to their applicability or scope, process steps and focus or specific emphasis, Raz and Hillson (2005:65) concludes that there is general convergence around the process steps, as depicted in Figure 3-6. However, organisations are at liberty to adopt whatever methods they deem suitable for determining the context, conducting risk assessments, risk treatment, as well as, for risk communication and reviews (IRM, 2002:1; Dereinda & Greenwood, 2015:3). The context for risk management must be established at every level where risk assessments are performed (Raz & Hillson, 2005:57; ISO, 2009a; Pojasel, 2013:85; Dereinda & Greenwood, 2015:3).

The identification, analysis and evaluation steps in Figure 3-6 are collectively termed risk assessment (IRM, 2002; ISO, 2009a). The outputs from the risk assessment process is the characterisation of risk in terms of the probability (of the consequence materialising) and consequence (IRM, 2002:2; ISO, 2009a; Dereinda & Greenwood, 2015:6), followed by deciding on the level of risk. IRM (2002:2) and Evans *et al.* (2007:607) highlight that the risk assessments have traditionally been used in the context of occupational health and safety where the potential consequences were mostly recognised as negative, but now have much wider application. Thus, the risk assessment approaches have also previously focused on mitigating the negative effects, whereas sustainability, the goal the ISO 14001 standard seeks to contribute to, calls for the consideration of both negative and positive impacts (Evans *et al.*, 2007:607; ISO, 2015a).

From the risk assessment process, a decision has to be made on what management action is to be taken to modify or control or to treat the risk (IRM, 2002:10; Purdy, 2010:884; Fonseca, 2015:44; ISO, 2015a). Such risk control measures must be integrated into operational plans (IRM, 2002:10; Fonseca, 2015:44; ISO, 2015a). A key consideration in making this decision is that the benefits of achieving the intended outcomes must outweigh the costs of managing risk for organisations to operate in a sustainable manner (IRM, 2002:11; World Bank, 2014:10; Buscher, 2015:282).

Uncertainty, and hence, risks and opportunities, in construction projects stem from three sources. Firstly, from external organisational issues, which are outside the control of the organisation (Freeman *et al.*, 2010:105; Galeazzo & Klassen, 2015:159; LRQA, 2017). Secondly, uncertainty also lurks with internal organisational issues, which incorporate the construction activities themselves (IRM, 2002:2; ISO, 2009a; ISO, 2015a). Lastly, stakeholders are also a source of great uncertainty on construction projects, on the basis that their needs can be wildly divergent and are dynamic too (Preble, 2005:427; IFC, 2007:2; Ward & Chapman, 2008:563; Bal *et al.*, 2013:705). In addition, underestimating or overestimating stakeholder power or interest on the organisation or construction project can be quite risky (IFC, 2007:15). Interestingly, as outlined earlier in this section, all the three sources of uncertainty on construction projects are elements of organisational context.

### **3.6 Literature review summary**

The literature review was conducted, as presented in this section and throughout this mini-dissertation, to understand context of the organisation with related risks and opportunities, from the perspective of the South African construction industry. As seen in section 1.3, three objectives were set in pursuit of the study aim. The literature review is used to achieve objective (1) and (2) (Rundolf, 2009; Roberts, 2010:86; Walliman, 2011; Creswell, 2014; Pandey & Pandey, 2015). Objective (3) was pursued using the methods selected from objective (2) (Roberts, 2010:86). The highlights distilled from literature in relation to the foregoing are summarised in the paragraphs that follow.

Firstly, the literature reviewed indicates that context is generally considered as the external and internal organisational issues. Furthermore, the review helps to clarify that “context of the organisation”, the crux of this study, is characterized as organisational issues (external and internal) and the stakeholder relationships, including the scope of the EMS - and this is how it should be understood in this study.

Secondly, it becomes clear from the review, that the elements of organisational context (organisational issues and the needs of relevant interested parties), are interconnected and dynamic (Ward & Chapman, 2008:571; Reed *et al.*, 2009:1946; Pacheco & Garcia, 2012:2177). The review also highlights that organisations have no control over external matters in relation to internal ones over which they have better control (Johnson *et al.*, 2008:37; Freeman *et al.*, 2010:105; Galeazzo & Klassen, 2015:159; LRQA, 2017). The review also shows that organisations must determine which of the needs of relevant interested parties, as elements of organisational context, must become part of their compliance obligations (ISO, 2015a). The review further highlights that for organisations to achieve superior environmental performance, the risks and opportunities (uncertainty) which lurk with context of the organisation should be effectively managed (IRM, 2002:2; ISO, 2009a; Purdy, 2010:882; ISO, 2015a).

Thirdly, review also highlights that the views on the benefits or the effectiveness of implementing the ISO 14001-based EMS are quite divergent (Arimura *et al.*, 2016:556; Zobel, 2016:587; Boiral *et al.*, 2017:25; Grandic, 2017:31). The review further unearths that “context”, which is an organisation-specific phenomenon, is the main reason for such divergence in views on the impact of ISO 14001 (Yin & Schmeidler, 2009:482; Hartel & O’Connor, 2014:419; Harvey *et al.*, 2015:48; Arimura *et al.*, 2016:565). In spite of the foregoing, the review highlights that context is understudied (Yin & Schmeidler, 2009:482; Boiral *et al.*, 2017:24). The review further shows that the risks and opportunities are rooted in the elements of context, organisational issues and stakeholder expectations (Psomas *et al.*, 2011:502; Boiral *et al.*, 2017:4).

With regard to study objective (1), the review highlights that the ISO 14001-based EMS is, globally, the most widely used voluntary environmental management tool and can be applied to any organisation or industry (Vastage & Melnyk, 2002:4760; Aravind & Christmann, 2011:18; Heras-Saizarbitoria *et al.*, 2011:192; Iatridis & Kesidou, 2016:1; Boiral *et al.*, 2017:22; Vilchez, 2017:35). The review also uncovers that organisations are more motivated by internal factors than external factors to adopt the ISO 14001-based EMS (Vastage & Melnyk, 2002:4760; Aravind & Christmann, 2011:18; Heras-Saizarbitoria *et al.*, 2011:192; Psomas *et al.*, 2011:502; Iatridis & Kesidou, 2016:1; Boiral *et al.*, 2017:22; Vilchez, 2017:35). Furthermore, Psomas *et al.* (2011:506) highlights that these motivations are not all in line with the ISO 14001 objective, sustainability, which Pojasek (2013:84) and ISO (2015a) indicate is known to be driven by both external and internal factors. The review also shows that successful organisations are those that internalise all issues by making them part of their daily activities (Yin & Schmeidler, 2009; Heras-Saizarbitoria *et al.*, 2011a; Psomas *et al.*, 2011:502; Boiral *et al.*, 2017:4).

In addition, the review indicates that the construction sector is responsible for significant negative environmental impacts, particularly the disruption of ecological systems (Zutshi & Creed, 2015:93; Campos *et al.*, 2016:454; Jensen *et al.*, 2016:6). The review also shows the importance of ensuring that sustainable approaches be entrenched into the ways in which the industry executes construction activities to limit the negative impacts (Arts & Faith-Ell, 2012:3249; Jensen *et al.*, 2016:6). The ISO 14001-based EMS, according to available literature, has an important sustainability role to play in the construction industry (Christini *et al.*, 2004; Turk, 2009; Rodriguez *et al.*, 2011; Gluch & Raisanen, 2012; Campos *et al.*, 2016; Jensen *et al.*, 2016).

Furthermore, the review highlights that the construction firms are generally hesitant to engage in the implementation of long-term processes, equipment and systems (Dubois & Gadde, 2002:629; Rust & Koen, 2011:7; Gluch & Raisanen, 2012; Wessels, 2015:88; Pillay & Mafini, 2017:2). Sustainability, the goal of ISO 14001, is a long-term concept (Johnston *et al.*, 2007:62; Bal *et al.*, 2013:697; ISO, 2015a) but, construction firms do not seem to “think long-term”. The review also highlights that the construction industry (infrastructure projects) has failed to deliver on sustainability commitments (Arts & Faith-Ell, 2012:3249; Wessels, 2015:88). Ironically, in certain instances, the review shows that some construction project promoters or owners prefer those construction firms (or contractors) which have formal ISO 14001-based EMSs over those that do not (Turk, 2009:559; Rodriguez *et al.*, 2011:1858). The literature review also elucidates that construction industry organisations should not be treated in any special way, with regard to ISO 14001 standard or sustainability, the only difference is in the organisational factors or “context”, articulated in section 3.4 (Bresnen & Marshall, 2001:335).



With regard to study objective (2), the review highlights the lack of a universally agreed method for determining context (Griffin, 2007:860; Mezzi & Benblidia 2017:28). From this review, it is also clear that, of the existing methods, the political, economic, sociological, technological, legal and environmental (PESTLE) framework is the most widely used for understanding or determining external and internal organisational issues (Johnson *et al.*, 2008; ISO, 2015d; Louw & Venter, 2017; LRQA, 2017). Similarly, the review shows that there is no universally agreed definition of stakeholders or analysis methods (Donaldson & Preston, 1995:66; Friedman & Miles, 2006:4; Reed *et al.*, 2009:1934; Mainardes *et al.*, 2011:237). However, the review shows that, one of the most effective methods of identifying stakeholders and their expectations, is to use brain-storm sessions (workshop format), with participants who understand the organisation and the external environment (IFC, 2007:13; Johnson *et al.*, 2008:57; Reed *et al.*, 2009:1937; Colvin *et al.*, 2016:273; Roberts, 2016:9). The review further brings out the idea by Bryson *et al.* (1990:184), Pacheco and Garcia (2012:2177) and Ward and Chapman (2008:571) to link stakeholders to the organisational issues *so that it is easy to visualize what is happening within the business environment*. The review also led to the discovery of one of the most common methods of analysing or classifying stakeholders - the “power/interest” matrix, promoted by Ackermann and Eden (2011:183). Lastly, the review helps to identify the criteria for determining compliance obligations, contemplated in clause 4.2 of the ISO 14001 standard (ISO, 2015a).

**CHAPTER 4 RESULTS AND DISCUSSION**

**4.1 External and internal organisational issues**

As outlined in section 2.4 and section 3.4.2, the external and internal organisational issues can be determined and presented in many different ways (Griffin, 2007:860; Mezzi & Benblidia 2017:28). The way in which the identified organisational issues are presented is influenced by the purpose for determining the issues (Bryson, 2004:27; Ward & Chapman, 2008:564; Reed *et al.*, 2009:1937). In this study, the organisational issues are presented in such a manner as to facilitate the use of the idea by Bryson *et al.* (1990:184), Pacheco and Garcia (2012:2177) and Ward and Chapman (2008:571) to link them with stakeholders. Thus, the descriptions of the organisational issues are aligned with the PESTLE dimensions (for external issues) and internal organisational influences (for internal issues), described separately and characterised as such (“*external*” or “*internal*”), both at business unit level and operational (project) level, as shown in Figure 4-1. Figure 4-1 below is an extract from Annexure A (p.78), which is itself extracted from the stakeholder register excel spreadsheet used to present the results of the pragmatic portion of this study, as can be seen in Annexure B and C (p.80 - 88).

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level	
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)
1	e.g Political		"Internal" or "External"	"Applicable" or "Not Applicable"	Additional issues, as necessary
2					

Figure 4-1: Presentation of external and internal organisational issues

One key observation is that the organisational issues determined at the business unit (higher) level were not entirely sufficient (not applicable or irrelevant) for application at the operational or project (lower) level. This is consistent with what O’Leary and Almond (2009:498) has articulated – that some field-level determination of external and internal issues is necessary. In addition, as indicated by Johnson *et al.* (2008:7) and O’Leary and Almond (2009:498), this phenomenon can be expected to be the case in other organisations as well, depending on their size and complexity.

When determining the operational (project) level external and internal issues, the business unit level issues were first tested for suitability, applicability and adequacy at project level. Where the business unit level issues were found to be adequate for use at project level, the business unit level issues were carried over to the project and used as such. In instances where the business unit level issues were inadequate for project use, additional issues or perspectives were added in the project issues column, as shown in Figure 4-1. Interestingly, only the issues identified at the business unit level under the “internal organisational influences” (people, knowledge and systems), item number 7b in Annexure A (p.79), were found to be entirely applicable, requiring no additional perspectives at project level. This can be explained by the point made by PMI (2013:20), which implies that whatever structure the projects adopt, they are still influenced by the “genetic make-up” of the parent organisations.

Another prominent pattern observed is that of the interplay or overlaps or the close relationships between the issues within the different elements of organisational issues, external and internal (PESTLE and internal dimensions). For example, some of the issues identified within economic and sociological dimension, were very closely related. Similar interplay was also evident between the political and legal dimensions. This interplay has been extensively highlighted in literature, as outlined in section 3.4.2 (Johnson *et al.*, 2008:56; Iatridis & Kesidou, 2016:2; Mezzi & Benblidia, 2017:28).

As a concluding thought on the discussion of organisational issues, it should be noted that the issues identified, as presented in full in Annexure A (p.78) and discussed in this section, may only be considered as meaningful relative to the point in time where these issues were determined, because the issues are, by nature, dynamic, as highlighted by Johns (2006:387), Johnson *et al.* (2008:13), Jofre (2011:14) and others, as mentioned in section 3.4.2. The organisational issues are intertwined with or closely related to the needs and expectations of interested parties, as articulated in section 3.4.3 (Pacheco & Garcia, 2012:2177; Ward & Chapman, 2008:571). The needs and expectations of interested parties are discussed in the next section.

## 4.2 Interested parties

As seen earlier in section 3.4.3 of this study, several approaches can be employed for stakeholder analysis (identification and classification) and thus, can also be presented in many different ways, depending on the purpose (Bryson, 2004:27; Ward & Chapman, 2008:564; Reed *et al.*, 2009:1937; Colvin *et al.*, 2016:267). As indicated in section 4.1, stakeholders were linked to organisational issues so that it is easy to visualize what is happening within the business environment - an idea put forward by Bryson *et al.* (1990:184), Pacheco and Garcia (2012:2177) and Ward and Chapman (2008:571). Using this approach makes the organisational issues to appear to metamorphose into the stakeholder issues. The stakeholders and their issues identified are presented in full in Annexure B (p.80) and Annexure C (p.85), for the business unit level and operational unit level, respectively.

Table 4-1 below displays the summary of stakeholders' needs or expectations that are linked to external and internal organisational issues, at both business unit and operational unit levels.

Organizational Level	Number Stakeholders Needs & Expectations	Stakeholder Issues Related to External Issues		Stakeholder Issues Related to Internal Issues	
		Number	Percentage of Total (%)	Number	Percentage of Total (%)
Business Unit Level	104	54	51,92	50	48,08
Operational Unit Level	96	43	44,79	53	55,21

Table 4-1: Summary organisational issues' link to stakeholder expectations.

As can be seen in Table 4-1 above, about 52% of needs and expectations of stakeholders identified at the business unit level are linked to external organisational issues, while the picture looks similar at the operational (project) level, with the link to external organisational issues at about 45%. The stakeholder issues linked to external and internal organisational issues are nearly split in a "50-50" configuration, as seen in Table 4-1.

As highlighted in literature, (e.g., O'Leary & Almond, 2009:497; ISO, 2009a; Johnson *et al.*, 2008:57; ISO, 2010; Pojasek, 2013:84; PMI, 2013; Hartel & O'Connor, 2014:421; ISO, 2015a; LRQA, 2017) that understanding organisational issues is crucial to aligning the organisation's activities with organisational goals, a skewed configuration at the relevant organisational levels (higher & lower levels) as seen in the results above could pose alignment challenges.

Firstly, alignment challenges between strategic and operational levels. Secondly, challenges could also be expected relating to the balance between the motivations for implementing ISO 14001-based EMS (understood from Boiral *et al.* (2017:22), Vilchez (2017:35) and others, to be more motivated by internal factors) and the sustainability requirement to deal with both external and internal organisational issues (“50-50”), not just internal ones.

Organizational Level	Number Stakeholders Needs & Expectations	Internal Stakeholder Expectations Related to External Organizational Issues		External Stakeholder Expectations Related to Internal Organizational Issues		External Stakeholder Expectations Related to External Organizational Issues		Internal Stakeholder Expectations Related to Internal Organizational Issues	
		Number	Percentage of Total (%)	Number	Percentage of Total (%)	Number	Percentage of Total	Number	Percentage of Total
Business Unit Level	104	3	2,88	17	16,35	51	49,04	33	31,73
Operational Unit Level	96	6	6,25	33	34,38	37	38,54	20	20,83

Table 4-2: Summary of organisational issues link to stakeholder expectations.

Another pattern which featured prominently is that displayed in Table 4-2, above, that there were some internal stakeholders’ expectations linked to external organisational issues, and vice versa. There was also the obvious pattern of links of internal stakeholders’ expectations to internal organisational issues and vice versa. In fact, the said obvious configuration was about 81% (external to external, plus internal to internal) at business unit level and about 59% at project (operational) level. The cross linkages (external to internal and vice versa) observed, of about 41%, at the project (operational) level facilitates the consideration or inclusion into the EMS of environmental issues (and external stakeholders) “beyond the fence”, consistent with the environmental management philosophy highlighted by ISO (2015a), Nel & Alberts (2016), Roberts (2016:9) and others.

As described above, the ability of the stakeholder analysis method used to pull in issues from “outside the fence”, to be considered for inclusion into the EMS design could be considered a strength of the method selected. In addition, the myriad of linkages observed contribute to the understanding of or affirmation of the interconnections of organisational issues with stakeholder needs or expectations and further confirms the complexity which can exist (Johnson *et al.*, 2008:56; Prno & Slocombe, 2012:348; Pojasek, 2013:82).

Table 4-3 below, indicates the classification of stakeholders as either “**external**” or “**internal**”, highlighted in section 3.4.3 (Freeman *et al*, 2010:24; ISO, 2015a).

Organizational Level	Number Stakeholders Needs & Expectations	Stakeholder Issues Related to External Stakeholders		Stakeholder Issues Related to Internal Stakeholders	
		Number	Percentage of Total	Number	Percentage of Total
Business Unit Level	104	68	65,38	36	34,62
Operational Unit Level	96	70	72,92	26	27,08

Table 4-3: Summary of expectations related to external and internal stakeholders.

The results in Table 4-3, above, indicate that about 65% of stakeholder expectations at the business unit level were related to external stakeholders, with about 73% at the operational or project level. While the foregoing does not necessarily indicate proportional complexity or importance of the stakeholder expectations, this observation amplifies the concept picked up during the literature review highlighted in section 3.4.3 that organisations must learn to properly balance the needs of both internal and external stakeholders with their business objectives (Preble, 2005:410; Friedman & Miles, 2006:14; Mainardes *et al.*, 2011:231; Eskerod *et al.*, 2015:44; Benn *et al.*, 2016:3).

Stakeholders may also be classified in terms of the power and interest, as highlighted in section 3.4.3 (Reed *et al.*, 2009:1938; Ackermann & Eden, 2011:183). The practical application of the power-interest classification promoted by Reed *et al.* (2009:1938) and Ackermann and Eden (2011:183) has yielded the results at the business unit level, as displayed in Table 4-4, below.

Stakeholder Position on Power/Interest Matrix	Stakeholders Needs & Expectations		Stakeholder Issues Related to External Stakeholders		Stakeholder Issues Related to Internal Stakeholders	
	Number	Percentage of Total	Number	Percentage of Total	Number	Percentage of Total
High Power/ High Interest (Key Players)	66	63,46	31	29,81	35	33,65
High Power/ Low Interest (Trend Setters)	14	13,46	14	13,46	0	0,00
Low Power/ High Interest (Subjects)	22	21,15	21	20,19	1	0,96
Low Power/ Low Interest (Crowd)	2	1,92	2	1,92	0	0,00
<b>Total</b>	<b>104</b>	100,00	<b>68</b>	<b>65,38</b>	36,00	<b>34,62</b>

Table 4-4: Summary of stakeholder classification in terms of power and interest (Business unit level).

From the results indicated in Table 4-4 above, about 63% of stakeholders are categorised as “key players” at business unit level and 55 % at project level, as indicated in Table 4-5, below. Key players are supposed to be engaged closely, because of the attribute “power” which they possess and can wield over the business, as Reed *et al.* (2009:1938) and Ackermann and Eden (2011:183) have articulated. Both Table 4-4 and 4-5 also indicate that the stakeholders classified as key players are both external and internal. In addition, both Table 4-4 and 4-5 indicate that more than 50% of stakeholder issues relate to key players at both business unit level and operational level. These results imply that the construction company selected for this study and others that may display a similar configuration, will be required to adopt a strategy to effectively address or balance the divergent needs of the different key players other than the obvious and usually “noisy” or “pushy” customer (Agle *et al.*, 1999:521; Bal *et al.*, 2013:695). These observations also add to understanding and affirmation of the complexity of the interactions between organisational issues and stakeholder needs or expectations discussed above, which have been highlighted by other researchers (Johnson *et al.*, 2008:56; Prno & Slocombe, 2012:348).

Stakeholder Position on Power/Interest Matrix	Stakeholders Needs & Expectations		Stakeholder Issues Related to External Stakeholders		Stakeholder Issues Related to Internal Stakeholders	
	Number	Percentage of Total	Number	Percentage of Total	Number	Percentage of Total
High Power/ High Interest (Key Players)	53	55,21	32	33,33	21	21,88
High Power/ Low Interest (Trend Setters)	9	9,38	9	9,38	0	0,00
Low Power/ High Interest (Subjects)	34	35,42	29	30,21	5	5,21
Low Power/ Low Interest (Crowd)	0	0,00	0	0,00	0	0,00
<b>Total</b>	<b>96</b>	<b>100,00</b>	<b>70</b>	<b>72,92</b>	<b>26</b>	<b>27,08</b>

Table 4-5: Summary of stakeholder classification in terms of power and interest (Operational unit level)

Classification	Business Unit Level (BUL)				Operational Unit Level (OUL)			
	Stakeholder Expectations Related to External Organizational Issues		Stakeholder Expectations Related to Internal Organizational Issues		Stakeholder Expectations Related to External Organizational Issues		Stakeholder Expectations Related to Internal Organizational Issues	
	Number	Percentage of Total (%)	Number	Percentage of Total (%)	Number	Percentage of Total (%)	Number	Percentage of Total
High Power/ High Interest (Key Players)	18	17,31	48	46,15	25	26,04	28	29,17
High Power/ Low Interest (Trend Setters)	14	13,46	2	1,92	9	9,38	0	0,00
Low Power/ High Interest (Subjects)	20	19,23	0	0,00	9	9,38	25	26,04
Low Power/ Low Interest (Crowd)	2	1,92	0	0,00	0	0,00	0	0,00
<b>Total</b>	<b>54</b>	<b>51,92</b>	<b>50</b>	<b>48,08</b>	<b>43</b>	<b>44,79</b>	<b>53</b>	<b>55,21</b>

Table 4-6: Links between the stakeholder categories and organisational issues



Table 4-6 above, displays a profile of the links between the stakeholder categories and organisational issues. Table 4-6 shows that some of the stakeholders classified as key players are also linked to external organisational issues. External organisational issues are factors external to the organisation, outside the control of the organisations (Johnson *et al.*, 2008:37; Freeman *et al.*, 2010:105; Galeazzo & Klassen, 2015:159). In fact, just over 50% of stakeholder issues are linked to external organisational issues at the business unit level and about 45% at the operational level. These observations also contribute to the understanding and affirmation of the complexity of the interactions between organisational issues and stakeholder needs or expectations discussed above which has been highlighted by other researchers (Johnson *et al.*, 2008:56; Prno & Slocombe, 2012:348).

The stakeholders identified at both business unit level and operational level were also sorted into different categories, as can be seen in Figure 4-2 (Business unit level).and Figure 4-3 (Operational unit level), below. The choice of categories used was also dependent on the purpose for the stakeholder analysis, as highlighted by Ward and Chapman (2008:567) and Reed *et al.* (2009:1937). The caution by Reed *et al.* (2009:1937) not to use pre-determined categories to characterise stakeholders, until the stakeholders and their needs and expectations have been identified, was heeded and found to be useful. For instance, less obvious categories, such as “*strategic partners*”, which emerged at the business unit level, were not identified or relevant at the operational level.

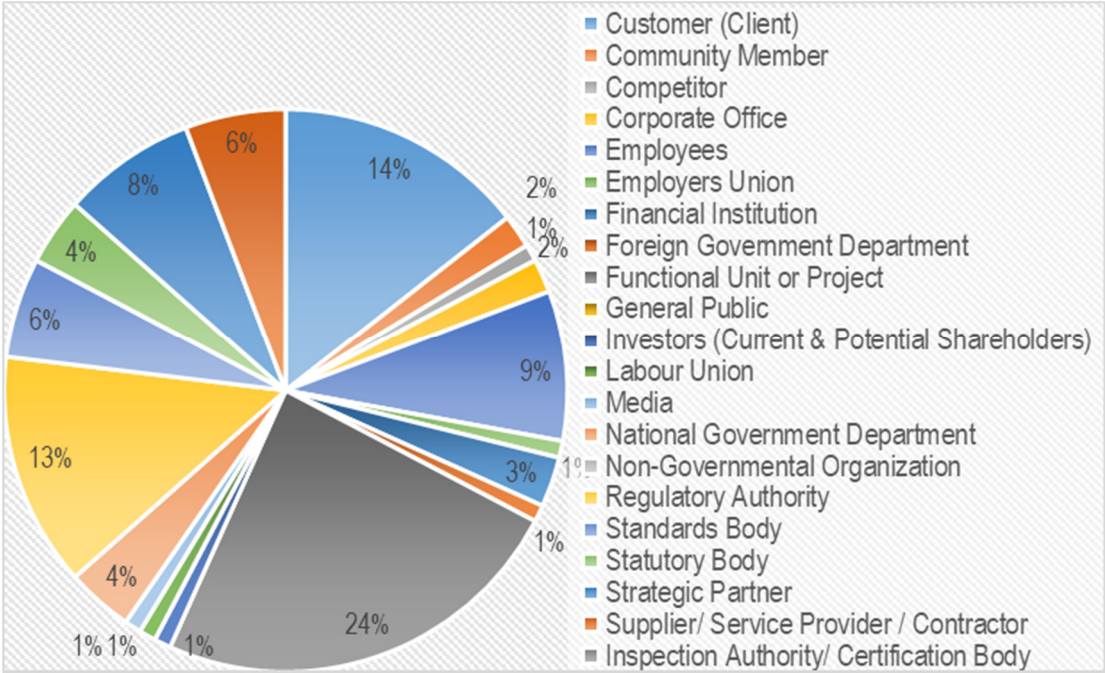


Figure 4-2: Distribution of stakeholder expectations per category (Business unit level).

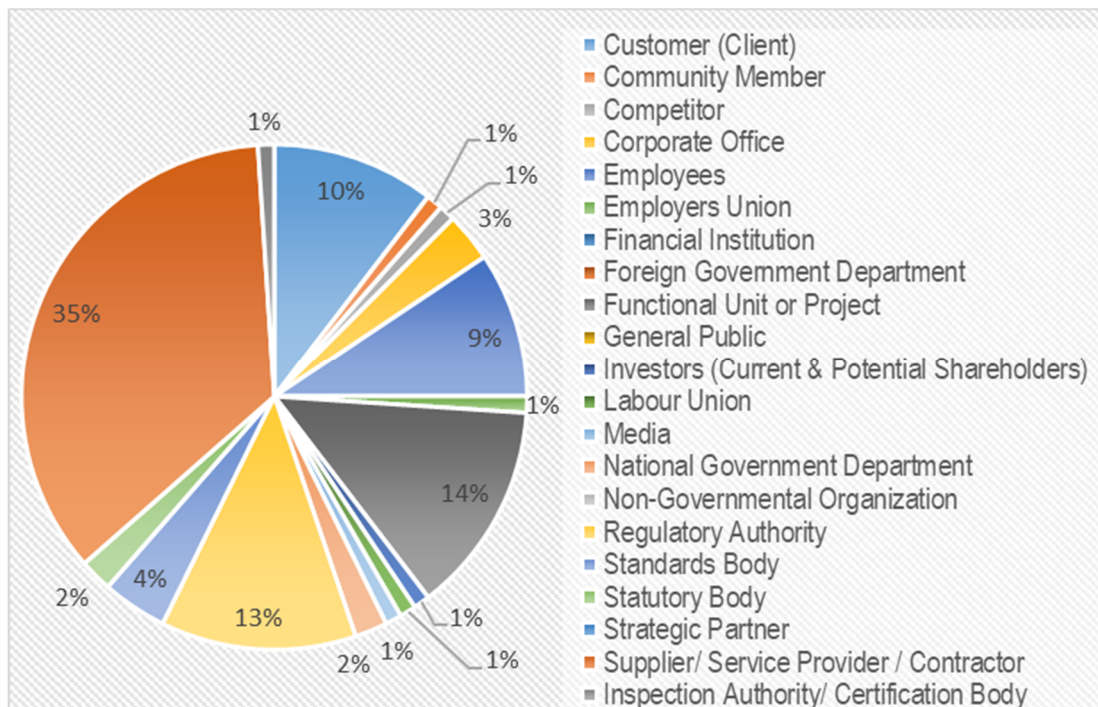


Figure 4-3: Distribution of stakeholder expectations per category (Operational unit level).

Looking at both Figure 4-2 and 4-3, one issue stands out, that about 6% of stakeholders are categorised as “service providers/contractors” at the business unit level and 35% at project (operational) level. Since the project in focus is a government infrastructure one and the construction company is a CIDB Grade 9, it is suspected or may serve as an affirmation that, this higher percentage at project level may be partly influenced by what CIDB (2012:1) highlighted, that the large contractors are expected to enrol or sub-contract some of the work to smaller contractors.

At the operational unit level, as can be seen in Annexure C (p.85), some stakeholders (e.g., DEAT, DoL and Employees) were linked to a multitude of expectations. In addition, some stakeholders, such as ESKOM (the project owner), were identified and classified in different PESTLE dimensions and in different capacities, e.g. as “customer” and “service provider”. Consequently, such stakeholders would have to be engaged by the construction organisation in different capacities and on different issues accordingly, as Mathur *et al.* (2008:603) has articulated. This, too, confirms the complexity of possible stakeholder relationships (Ward & Chapman, 2008:571; Reed *et al.*, 2009:1946; Pacheco & Garcia, 2012:2177). The nature of these needs and expectations demand that a corresponding multitude of stakeholder engagement agents are to be deployed at different organisational levels and on different issues, as indicated by Ackermann and Eden (2011:191).

Other practical lessons drawn from this study are that the stakeholder analyses and engagement can be quite a daunting task for organisations (Wolfe & Putler, 2002:64; Bourne, 2010:19; Ackermann & Eden, 2011:182). Stakeholder analysis is also time-consuming (Bryson, 2004:27; Bourne, 2010:21; Prno, 2013:586). It took two “long” days, in this study, to complete the first round of the business unit level stakeholder analysis and a further two to do the project level analysis, with longer time of preparatory work before that and refinements afterwards. This study also reaffirms what Owen and Kemp (2013:34) highlighted that it is quite challenging to try and get top company leadership together for this long, unless they are convinced of the value to be abstracted from doing so. This study coincided with the selected company’s ISO 14001 certification transition phase from ISO 14001:2004 to ISO 14001:2015, so there was indeed some value for the organisation. Unfortunately, there are no easy ways of doing this, according to Prno (2013:586) - and the temptation is really huge to circumvent this arduous task.

As part of understanding the context of the organisation, ISO 14001 standard, in clause 4.3, requires that the needs and expectations of stakeholders be sorted into “compliance obligations” and “non-compliance obligations” (ISO, 2015a). Compliance obligations are described in section 3.4.4. Section 3.4.4 also sets out the criteria for determining compliance obligations. Accordingly, any stakeholder issue satisfying one or more of the criteria was determined as a compliance obligation, otherwise not. The criteria were found to be interrelated and were integrated into the Excel spreadsheet (stakeholder register), as shown in register extract, Figure 4-4, below:

Determining Compliance Obligation				
Legal & Other?	Key Players?	Relevance to BMS?	Relevance to Intended Outcome	Is IAP Issue a Compliance Obligation?
No	No	Yes	No	Yes
Yes	Yes	Yes	Yes	Yes
Yes	No	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes

Figure 4-4: Determining compliance obligations.

The segmentation of stakeholder expectations into “compliance obligations” and “non-compliance obligations” using the criteria outlined in section 3.4.4 has generated the results displayed in Table 4-7, below.

Organizational Level	Number of Stakeholders Needs and Expectations Identified	Number of Stakeholders Needs and Expectations Categorized as "Compliance Obligations"	Number of Stakeholders Needs and Expectations Categorized as "Non-Compliance Obligations"	Compliance Obligations as a Fraction of Total (%)
Business Unit Level	104	100	4	96
Operational Unit Level	96	96	0	100

Table 4-7: Summary of stakeholder Issues categorised as compliance obligations

As Table 4-7 (above) shows, 96% and 100% of stakeholder needs and expectations identified at business unit level and at operational (project) level, respectively, were segmented as compliance obligations. This may be partly due to the fact that the intended outcomes of the construction company EMS were taken into account when determining external and internal organisational issues, which were then linked to stakeholders, as suggested by Pacheco and Garcia (2012:2177), and as presented for the business unit level, in Annexure B (p.80) and Annexure C (p.85) for the operational unit level. This, in a sense, also confirms the strength of the approaches used, which resulted in limiting the "Freeman effect" outlined in section 3.4.3, by pulling in mainly relevant organisational issues and stakeholder matters.

The result that nearly all stakeholder issues identified at both organisational levels (business unit and operational), came out to be compliance obligations, could also be used to further explore or understand the notion outlined by Jensen *et al.* (2016:8) that sustainability from the perspective of construction firms may be narrowed down to compliance with construction project and corporate sustainability requirements.

As noted earlier, in section 3, ISO (2015a) sees understanding the context of the organisation as understanding organisational issues, stakeholder expectations, compliance obligations and the scope of the EMS. Once these are determined or understood, the *understanding of context of the organisation* (ISO, 2015a) is then complete. The scope of the EMS is highlighted in section 3.4.4. With the information presented in the foregoing sections of this chapter, the scope as highlighted in section 3.4.4, can thus be defined and the *understanding of context of the organisation*, as outlined in ISO (2015a) would then be completed.

Given that 100% of the stakeholder expectations identified at the operational (project) level and nearly all (96%) at the business unit level were categorised as compliance obligations in terms of the criteria outlined in section 3.4.4, further sorting will be required to ensure that the stakeholder needs or expectations that get to occupy “front-row” in organisational decision-making processes are the most legitimate or relevant (Greenwood, 2007:318; IFC, 2007:16; Reed *et al*, 2009:1933; Eskerod *et al.*, 2015:44). In order to effectively deal with these complex and interconnected organisational issues and stakeholders issues in a meaningful way, organisations have to balance these with their intended business objectives (Agle *et al.*, 1999:521; Bal *et al.*, 2013:695). Understanding what is at stake (risks and opportunities) in each of the compliance obligations or stakeholder relationships is to be used to conduct the balancing act (ISO, 2009a), as outlined in section 3.5. The next section paints the picture of the risks and opportunities related to organisational context for the construction company in focus.

**4.3 Risks and opportunities**

One of the objectives of this study was to understand the risks and opportunities related to the context of the organisation. The risks and opportunities are highlighted in section 3.5. The complete understanding of the context of the construction firm selected for this study (objective 2 of this study) has been presented in the foregoing sections (4.1 and 4.2). As seen in section 4.2, the organisational issues appear to have metamorphosed into the stakeholder issues. Thus, the picture that portrays the relationship between context (stakeholder relationships) and uncertainty (risks and opportunities), as drawn from Reed *et al.* (2009: 1938) is shown in Figure 4-5, below.

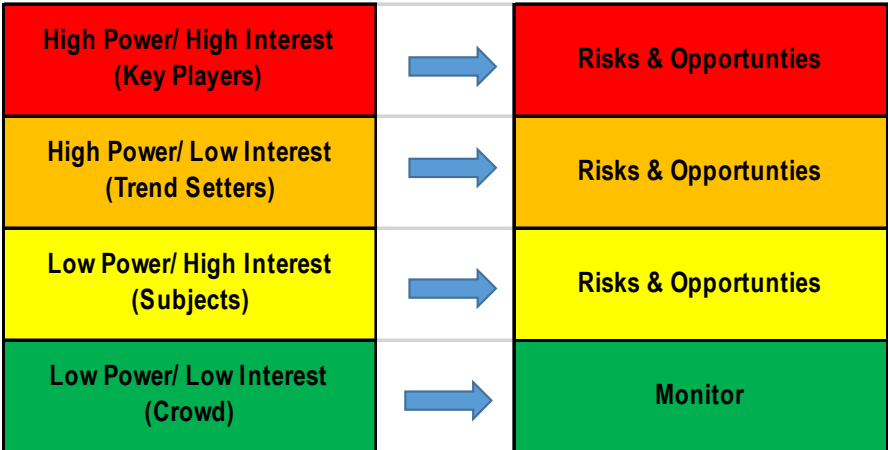


Figure 4-5: Stakeholders’ relationship with risks and opportunities

Table 4-8, below paints the picture of the relationship between context and uncertainty (risks and opportunities) for the construction company in focus, in pursuit of study object (2).

Classification	Compliance Obligations (Stakeholders Needs and Expectations) at Business Unit Level (BUL)		Compliance Obligations (Stakeholders Needs and Expectations) at Operational Unit Level (OUL)		Compliance Obligations (Stakeholders Needs and Expectations) Combined at BUL and OUL	
	Number	Percentage of Total (%)	Number	Percentage of Total (%)	Number	Percentage of Total (%)
High Power/ High Interest (Key Players)	66	66,00	53	55,21	119	60,71
High Power/ Low Interest (Trend Setters)	12	12,00	9	9,38	21	10,71
Low Power/ High Interest (Subjects)	20	20,00	34	35,42	54	27,55
Low Power/ Low Interest (Crowd)	2	2,00	0	0,00	2	1,02
Total	100	100	96	100	196	100,00

Table 4-8: Summary of stakeholder Issues categorised as compliance obligations

As indicated in Table 4-8 (above) and drawing from Reed *et al.* (2009:1938), it can be seen and assumed that more than 60% of risk and opportunity may reside with the stakeholders categorised as “key players” (with high power and high interest) aggregated at both business unit level and operational level. The next category of stakeholders is those characterised as “context setters” (with high power and low interest), potentially holding up around 10% of risks and opportunities. The compliance obligations related to stakeholders characterised as “trend setters” (low power/high interest) is potentially holding up about 28% of risk and opportunity.

The last level is the compliance obligations related to stakeholders categorised as “crowd” (low power/low interest), representing a mere 1% of risk and opportunity. Interestingly, this 1% seems to represent the issues related to the stakeholder group which can be categorised as vulnerable, underprivileged, or voiceless and may even be oblivious to the ways in which they may be affected by the organisations’ activities and whose concerns must be clearly understood and not overlooked, as highlighted in section 3.5.3 (ISO, 2010; Reed *et al.*, 2009:1939; ISO, 2010; Mainardes *et al.*, 2012:1864). As seen in Table 4-6, the picture painted in Table 4-8 above, should be understood in the context that some of the stakeholders perceived to have power (key players and context setters) are also linked to external organisational issues and may also be external, outside the direct control of the organisations (Johnson *et al.*, 2008:37; Freeman *et al.*, 2010:105; Galeazzo & Klassen, 2015:159).

## **CHAPTER 5 CONCLUSION**

### ***5.1 Introduction***

This study aims to understand context of the organisation with related risks and opportunities, from the perspective of the South African construction industry. In order to achieve this aim, three study objectives were established, as outlined in section 1.3. Literature review was used to achieve objective (1) and (2). Objective (3) was pursued using the methods selected from objective (2), as suggested by Roberts (2010:86) and applied at two levels (the business unit level and operational unit level) within the construction firm in focus. The results obtained in pursuit of objective (3) were analysed and discussed in relation to relevant results obtained by other researchers (Roberts, 2010:86). The conclusions drawn from such discussion and from literature review are presented in the sections that follow.

### ***5.2 Concluding thoughts on literature review***

The relevant literature was reviewed, distilled and pulled into this study as presented in section 3 and throughout this mini-dissertation. The review was conducted to obtain more insights into the research topic. The relevant literature pulled in has successfully been used to provide better understanding of the research topic, formulate the research problem, as well as, determine the research methods and for interpreting the results of the study, as modelled in Figure 2-1 (page 8).

### ***5.3 Concluding thoughts on research methods***

As outlined in section 2, research is conducted to uncover, advance and validate existing information or knowledge about a given topic or theme (Walliman, 2011:15; Creswell, 2014; Pandey & Pandey, 2015:8). Given that the aim and objectives of the study were effectively pursued, whereby the literature review outputs were successfully linked with pragmatic results, as modelled in section 2, it is concluded that the research methods deployed to this study have yielded the desired results.

## **5.4 Concluding thoughts on research objectives and overall aim**

### **5.4.1 Objective 1**

From the literature review presented in section 3 and throughout the rest of this mini-dissertation, it is concluded that objective 1 “to understand ISO 14001:2015-based EMS and its role in contributing to sustainability within the construction industry” has been achieved. Firstly, the construction sector is known to be responsible for significant negative environmental impacts, (Zutshi & Creed, 2015:93; Campos *et al.*, 2016:454; Jensen *et al.*, 2016:6). Secondly, the ISO 14001 standard can be applied to any organisation or industry and thus, the construction industry organisations should not be treated in any special way - the only difference is in the organisational factors or “context” (Bresnen & Marshall, 2001:335). In addition, the construction industry has been reported to lag behind in delivering on sustainability expectations (Arts & Faith-Ell, 2012:3249; Wessels, 2015:88) - this study links the reasons for this lag to contextual factors, consistent with extant literature. Lastly, given that context is the key differentiating factor of performance, by effectively understanding context of the organisation, designing and implementing the ISO 14001-EMS, the internal motivations which are known to drive firms to adopt the EMS, can be harnessed to drive substantive environmental performance and hence sustainability.

### **5.4.2 Objective 2**

With regard to study objective (2), the study acknowledges the lack of a universally agreed method for determining context (Griffin, 2007:860; Mezzi & Benblidia 2017:28). The study identifies the political, economic, sociological, technological, legal and environmental (PESTLE) framework, as the method commonly recommended for determining external and internal organisational issues (Johnson *et al.*, 2008; ISO, 2015d; Louw & Venter, 2017; LRQA, 2017). Similarly, the study acknowledges that there is no universally agreed definition of stakeholders or analysis methods (Donaldson & Preston, 1995:66; Friedman & Miles, 2006:4; Reed *et al.*, 2009:1934; Mainardes *et al.*, 2011:237).



The study also identifies the stakeholder analysis methods (IFC, 2007:13; Johnson *et al.*, 2008:57; Reed *et al.*, 2009:1937; Colvin *et al.*, 2016:273; Roberts, 2016:9). The study further brings out and tests the idea by Bryson *et al.* (1990:184), Pacheco and Garcia (2012:2177) and Ward and Chapman (2008:571) to link stakeholders to the organisational issues *so that it is easy to visualize what is happening within the business environment*. These methods yielded very encouraging results, in the sense that the issues pulled in were very relevant to the organisation's EMS and the wider organisational business objectives. In addition, external issues from far "outside the fence" and vulnerable stakeholders, who would normally be left out, were also pulled in for consideration into the EMS design - featuring as compliance obligations. The results were also perfectly linked to existing literature, as suggested by Roberts (2010:86). Lastly, the study helps to identify the criteria for determining compliance obligations, contemplated in clause 4.2 of the ISO 14001 standard (ISO, 2015a). What is presented in this study could be considered as an effective process for understanding context of the organisation.

#### 5.4.3 Objective 3

Firstly, it was established that external and internal organisational issues, as elements of context, determined at the business unit level were not entirely applicable at the operational (project) level. This is in conformity with the existing understanding that some field-level determination of external and internal issues is also necessary (O'Leary & Almond, 2009:498). This study also affirms the interconnectedness, overlaps and the complexity of elements of organisational context (organisational issues and possible stakeholder relationships), as shown by other studies highlighted in section 3.

Secondly, contrary to the extensive literature suggesting that organisations are more motivated by internal factors than external ones to adopt the ISO-based EMS, this study reveals that the construction firm in focus will have to deal with - and balance both external and internal issues (Psomas *et al.*, 2011:502; Boiral *et al.*, 2017:4). In addition, given that nearly all of the stakeholder expectations identified at both operational unit and business unit levels were categorised as compliance obligations, in terms of the criteria outlined in section 3.4.4, further sorting will be required to ensure that such compliance obligations can be appropriately prioritised, as others have articulated, as shown in section 3. The prioritisation should be based on the risks and opportunities inherent in those compliance obligations (Psomas *et al.*, 2011:502; Boiral *et al.*, 2017:4). Thus, for the EMS to be effective, the construction company in focus will have to internalise all issues and deal with them in a balanced fashion (on the basis of risk or opportunity, rooted in elements of context) by making them part of their daily activities, as Psomas *et al.* (2011:502), Boiral *et al.* (2017:4) and others have stated.

#### 5.4.4 Overall conclusion on study aim

The aim of the study was to understand context of the organisation with related risks and opportunities, from the perspective of the South African construction industry. The conclusions drawn on study objectives (1), (2) and (3) above, add to the understanding of context of the organisation. Furthermore, drawing on the overall outcomes and the experiences gained, this study suggests the promotion of the view that since organisational issues cannot exist in a vacuum, the entities (interested parties or stakeholders) related to those issues could be looked at as the conduits through whom the organisations can engage with those organisational issues. Thus, understanding context of the organisation, articulated in this study and contemplated in the ISO 14001:2015 standard, essentially comes down to effectively understanding stakeholder matters.

#### 5.5 Recommendations for practice

From a practical standpoint, it is recommended that since context (organisational and stakeholder issues) is dynamic, it should always be viewed in relation to the prevailing circumstances at the point in time where it is determined (Prno & Slocombe, 2012:348). Therefore, organisations must develop and continuously update or adapt the stakeholder management strategies throughout the duration of the construction project (as in this case) or other change effort, as others, such as, (IFC, 2007:100; Bal, 2014:39), have also suggested.

Internal motivations are known to drive organisations to adopt the ISO-based EMS, however, sustainability, the objective ISO 14001 seeks to contribute to, is known to be driven by both external and internal organisational factors (Psomas *et al.*, 2011:506; Pojasek, 2013; ISO, 2015a). In addition, it is also well-known that successful organisations are those that internalise all issues by making them part of their daily activities (Yin and Schmeidler, 2009; Heras-Saizarbitoria *et al.*, 2011a; Psomas *et al.*, 2011:502; Boiral *et al.*, 2017:4). Furthermore, given that the results from this study indicate that the organisations, such as construction company selected for this study, are exposed to organisational and stakeholder issues, which are both external and internal, such organisations must internalise all issues and deal with them in a balanced fashion for the EMS to be effective.

With the context of the organisation having been narrowed down (in this study) to stakeholder matters, the vulnerable stakeholders pulled in as compliance obligations must not be treated as the organisations perceive them (i.e. powerless and dis-interested), but as essential for the organisations to achieve their sustainability intentions, as Reed *et al.* (2009:1939), ISO, (2010), and others have recommended. In addition, if sustainability, the ultimate goal of ISO 14001, forms part of the organisation's genuine objectives, they (organisations) must make time for it.

## **5.6 Limitations of the study**

The limitations of this study are presented here to add to the context for interpreting the study outcomes. Firstly, while the exploratory research (literature review) covers some global perspectives, the focus is the construction industry in a South African setting. In spite of the boundaries of this study, the findings articulated in this study may have much wider application and obvious implications for both academia and practice. As indicated in section 2.2, the research was conducted on a single construction industry organisation (Yin, 1994:38). The understanding that context is an organisation-specific phenomenon (Yin & Schmeidler, 2009:482; Arimura *et al.*, 2016:565), still makes the single case study a suitable approach (Yin, 1994:38).

In addition, given that one of the key findings in this study is that context has to be determined at all relevant levels and functions in all cases (Johnson *et al.*, 2008:7; O’Leary & Almond, 2009:498), it should not matter how many sites are sampled. This also means that the context determined at a higher organisational level will be expected to be uniform across all operational units (lower levels) and that each operational unit level context will always be unique.

Secondly, while the difficulty in getting senior management (who understand the external business environment and internal company processes well) to take part in long “unplanned strategic planning sessions” (workshops), at both business unit level and project (operational) unit level to articulate organisational and stakeholder issues can be seen as a limitation of this study, it actually also helps with understanding aspects of the organisational context (ISO, 2009a). In addition, this study navigated around this limitation through the fact that the study coincided with the selected company’s ISO 14001 certification transition phase from ISO 14001:2004 to ISO 14001:2015. The workshops mentioned above were facilitated and conducted to elevate awareness, as well as, aiding the transition effort. Thus, as Owen and Kemp (2013:34) puts it, there was something in it for the organisation. This does not happen all the time - researchers and EMS practitioners are urged to account for all this in their research or practical EMS implementation contexts.

The other limitation worth highlighting relates to the lack of a sliding scale in the power/interest grid used in this study to classify stakeholders, which Mainardes *et al.* (2012:1867) also cites. The power and interest attributes of stakeholders were labelled either low or high – with nothing in between. This limitation is circumvented by the use of the multi-dimension criteria for determining compliance obligations, described in section 3.4.4 and the requirement to further process the resulting compliance obligations through the risk assessment process (ISO, 2015a) to ensure the “front row” is taken up by legitimate stakeholder matters in management decision making processes, outlined in section 3.5.

### **5.7 Suggestions for future research**

Firstly, some of the limitations of the study, outlined above, can be used as triggers for more research. Secondly, given the influential nature of context on organisational performance and the fact that that context is under-studied (Yin & Schmeidler, 2009:482; Boiral *et al.*, 2017:24), it is suggested that some more research be directed at understanding the specific aspects of organisational context, so that the management systems can be adequately designed and implemented with some increased assurance of attainment of the set sustainability goals.

Thirdly, with the understanding that there is no “template” for determining or presenting context of the organisation, this study calls for the standardisation of such methods for use, particularly, in the evaluation of the effectiveness of ISO 14001-based EMS to allow for more meaningful interpretations of outcomes of comparative studies, as Mazzi *et al.* (2016:882) put it. Lastly, given the ease with which the ISO 14001-based EMS in construction could be cosmetic and the environmental performance focus in the requirements built into the 2015 version of the ISO 14001 standard to counter this, as articulated in section 3.3.3, the jury should be out to assess the degree to which the ISO symbolism will be carried over to the 2015 ISO 14001 standard.

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**ANNEXURES**

**Annexure A: External and internal issues**

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level	
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)
1	Political	BUL Home Office is based in politically stable and democratic South Africa, with generally a militant society. Within South Africa, the situation prevailing in project locations to be specifically evaluated. The Corporate Level Risk Tolerance Matrix to be applied when evaluating political situations in other geographic locations.	External	Applicable	Project located in Lephalale Local Municipality, which is part of Waterberg District Municipality. ANC led, plus EFF & DA presence. Tendencies to politicize project issues.
2	Economic	With Home Office in South Africa, the BUL, of part of the leading and well-established multinational Johannesburg Stock Exchange (JSE) listed engineering and construction services group (Corporate Level). The Engineering and Construction industry is highly competitive, and open to cyclic growth and recess, influenced by business and consumer confidence, interest rates and government programmes. Procurement is currently based on price and broad-based black economic empowerment (BBBEE) points, with functionality or quality having a minimum threshold. Currently, low South African and global economic growth outlook. BUL Strategic Objective: Growth in power/energy & industrial water markets in selected countries in Sub-Saharan Africa and beyond, organically and via acquisitions.	External	Applicable	<b>Local economy:</b> Mining and quarrying (71.4%), finance, insurance, real estate and business services (5.2%), wholesale and retail trade, catering and accommodation (4.4%), transport, storage and communication (4.4%), general government (4.3%), agriculture, forestry and fishing (3.9%), electricity, gas and water (2.8%). Project finances built into contractual agreements with client and service providers or contractors.
3	Sociological	BUL is part of the well-established multinational Corporate Level organization operating in the Southern African Development Community (SADC) countries and selected Sub-Saharan African countries. South Africa, is a multi-ethnic society with a wide range of cultures, religions and 11 languages, as well as a rich cultural heritage and discriminatory apartheid past – all constitutionalised. Project or site specific sociological issues to be determined and addressed accordingly.	External	Applicable	Low level of skills (low post matric education). High unemployment.
4	Technological	Information Technology (IT) is a Group (Corporate Level) shared service and partially outsourced. As far as possible, uniquely tailored or company or project specific IT solutions to be avoided. As engineering and construction industry is open to cyclic growth and recess, technology advances also dictate changeover of IT equipment to latest, almost every 3 to 4 years. Prevent functionality overlaps in IT applications and incompatibility of IT systems by rationalising and standardisation, as far as possible. Adequate infrastructure capacity required to run operational systems in disaster mode. Innovative IT solutions to be applied, as far as possible. Internet connectivity required to access business management systems from anywhere. Identify, evaluate and mitigate current and future IT threats to business information and systems.	External	Applicable	Located about 300km north of the technologically advanced Gauteng Province.

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level	
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)
5	Legal	The regulatory framework in South Africa is considered satisfactory for business - legal requirements, standards and industry norms as they relate to the business to be determined and complied with. Elsewhere, project- or site- or country-specific regulations are also to be determined and addressed, as per the Corporate Risk Tolerance Matrix	External	Not Applicable	Project construction environmental management plan (CEMP). Municipality by-laws. Unlicensed waste management facilities in the area.
6	Environmental	BUL Home Office is Corporate Level shared (rented) space, based in water-scarce South Africa (Bedfordview, in Johannesburg). Project execution is conducted on client sites in selected geographic locations around the world, usually in accordance with country and/or local laws and client requirements. Accordingly, project or site specific environmental or ecological settings are to be determined and addressed.	External	Applicable	Home for 40% of South Africa's coal reserves. Work undertaken on already terraced ground, within fenced boundary.
7a	Internal Organisational Influences - Processes (Activities)	Implementation services for industrial projects focussed on power, oil & gas, mineral beneficiation and water solutions (desalination, supply and treatment) in the SADC countries and selected Sub-Saharan African countries. <b>Organisational Activities:</b> Core Activities: Business Development, Estimating; Project Delivery/ Execution; Commercial & Financial Management, Procurement; Human Resource Management, SHEQ Support; Secunda Oil and Gas (SOG) Operations, Electrical & Instrumentation (E & I) Operations; Water Solutions, Satellite Offices in Ghana and Mozambique. Outsourced Activities: Head Office space is rented and landlord provides the following: Such as Cleaning, Security, Landscaping, Air Conditioning, Construction, Lifts & Escalators, Parking Control, Waste Management, Marketing and Public Relations, Canteen Services.	Internal	Applicable	BUL is a subcontractor to one of the companies contracted to Eskom, the project owner, for the Medupi boiler packages comprising 6 units of about 800 megawatt electrical (MWe) each. Scope of work: supply, fabrication and erection of all the structural steel, ducting and bunkers for the boiler structure and auxiliary bay, as well as the installation of the complete boiler units and mechanical installations. Similar scope at Kusile. These two power plants represent almost 25% of the current Eskom's generating capacity and are the largest projects in South Africa. More than half a million tonnes of steel expected to be installed on both project
7b	Internal Organisational Influences - People, Knowledge and systems	<b>People, Knowledge and Systems:</b> BUL is part of the leading and well-established multinational Corporate Level Group. BUL is committed to achieving zero harm to people, processes, property and the environment, in spite of the general industry skills shortage and consistent with Corporate Level values.	Internal	Applicable	Not Applicable



**Annexure B: Stakeholder analysis - Business unit level stakeholder analysis**

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level		Stakeholder Identification				Stakeholder Classification			Determining Compliance Obligation					
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Players?	Relevance to BMS?	Relevance to Intended Outcome?	Is IAP Issue a Compliance Obligation?	
1	Political	BUL Home Office is based in politically stable and democratic South Africa, with generally a militant society. Within South Africa, the situation prevailing in project locations to be specifically evaluated. The Corporate Level Risk Tolerance Matrix to be applied when evaluating political situations in other geographic locations.	External	Not Applicable	Not Applicable	Political Parties	External	Community Member	Political influence	High	Low	Context Setter	No	No	Yes	No	Yes	
2						Labour Unions	External	Labour Union	Political influence	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
3						South African Police Service (SAPS)	External	National Government Department	Public order policing during unrests.	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
4						Embassies	External	Foreign Government Department	Visa requirements	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	Yes
5						Department of International Relations	External	National Government Department	International Relations: Information on selected countries the company wishes to do business in.	High	Low	Context Setter	No	No	No	Yes	Yes	Yes
6						Employer Associations	External	Employers Union	Industry Issues	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
7	Economic	With Home Office in South Africa, the BUL, of part of the leading and well-established multinational Johannesburg Stock Exchange (JSE) listed engineering and construction services group (Corporate Level). The Engineering and Construction industry is highly competitive, and open to cyclic growth and recess, influenced by business and consumer confidence, interest rates and government programmes. Procurement is currently based on price and broad-based black economic empowerment (BBBEE) points, with functionality or quality having a minimum threshold. Currently, low South African and global economic growth outlook. BUL Strategic Objective: Growth in power/energy & industrial water markets in selected countries in Sub-Saharan Africa and beyond, organically and via acquisitions.	External	Not Applicable	Not Applicable	SARS	External	Statutory Body	Tax Issues	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
8						Financial Institutions (Banks)	External	Financial Institution	Financial Matters	Low	High	Subject	No	No	No	No	No	No
9						Financial Institutions (Insurance)	External	Financial Institution	Insurance Matters	Low	High	Subject	No	No	No	No	No	No
10						South African Reserve Bank	External	Financial Institution	Interest rates	Low	Low	Crowd	No	No	No	Yes	Yes	Yes
11						Local Service Providers	External	Supplier/ Service Provider / Contractor	Goods and Service Delivery	Low	High	Subject	Yes	No	No	No	No	Yes
12						Doosan Heavy Industries	External	Strategic Partner	Power and Energy Strategic Partnership	Low	High	Subject	No	No	No	Yes	Yes	Yes
13						Black & Veatch	External	Strategic Partner	Power and Energy Strategic Partnership	Low	High	Subject	No	No	No	Yes	Yes	Yes
14						GE Alstom	External	Strategic Partner	Power and Energy Strategic Partnership	Low	High	Subject	No	No	No	Yes	Yes	Yes
15						Sener	External	Strategic Partner	Power and Energy Strategic Partnership	Low	High	Subject	No	No	No	Yes	Yes	Yes
16						Shanghai Electrical Company Group	External	Strategic Partner	Power and Energy Strategic Partnership	Low	High	Subject	No	No	No	Yes	Yes	Yes
17						Hylux	External	Strategic Partner	Water Programme Strategic Partnership	Low	High	Subject	No	No	No	Yes	Yes	Yes
18						Organica	External	Strategic Partner	Water Programme Strategic Partnership	Low	High	Subject	No	No	No	Yes	Yes	Yes
19						Competitors	External	Competitor	Competition	High	High	Key Player	No	Yes	No	No	No	Yes
20						Business Development Department (Corporate)	Internal	Functional Unit or Project	Business development	High	High	Key Player	No	Yes	Yes	Yes	Yes	Yes
21	Department of Water Affairs	External	National Government Department	Information on addressing water challenges in the context of business opportunities	Low	High	Subject	No	No	No	Yes	Yes	Yes					
22	Sociological	BUL is part of the well-established multinational Corporate Level organization operating in the Southern African Development Community (SADC) countries and selected Sub-Saharan African countries. South Africa, is a multi-ethnic society with a wide range of cultures, religions and 11 languages, as well as a rich cultural heritage and discriminatory apartheid past – all constitutionalised. Project or site specific sociological issues to be determined and addressed accordingly.	External	Not Applicable	Not Applicable	Media	External	Media	Media views	High	Low	Context Setter	No	No	No	No	No	
23						Department of International Relations	External	National Government Department	Information on cultural issues in selected countries the firm wishes to do business in.	Low	Low	Crowd	No	No	No	Yes	Yes	
24						Local Municipalities	External	Community Member	Local Social and Cultural Issues in the different operational location	High	Low	Context Setter	No	No	No	No	No	No

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level		Stakeholder Identification				Stakeholder Classification			Determining Compliance Obligation					
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Players?	Relevance to BMS?	Relevance to Intended Outcome?	Is IAP Issue a Compliance Obligation?	
25	Technological	Information Technology (IT) is a Group (Corporate Level) shared service and partially outsourced. As far as possible, uniquely tailored or company or project specific IT solutions to be avoided. As engineering and construction industry is open to cyclic growth and recess, technology advances also dictate changeover of IT equipment to latest, almost every 3 to 4 years. Prevent functionality overlaps in IT applications and incompatibility of IT systems by rationalising and standardisation, as far as possible. Adequate infrastructure capacity required to run operational systems in disaster mode. Innovative IT solutions to be applied, as far as possible. Internet connectivity required to access business management systems from anywhere. Identify, evaluate and mitigate current and future IT threats to business information and systems.	External	Not Applicable	Not Applicable	MRL Information Technology (IT) Department	Internal	Functional Unit or Project	Group IT Strategy and Shared Service Issues	Low	High	Subject	Yes	No	Yes	Yes	Yes	
26						Telecommunication and IT Service Providers - Dimension Data	External	Supplier/ Service Provider / Contractor	Telecommunication, IT Issues and collaborations	Low	High	Subject	Yes	No	No	Yes	Yes	Yes
27						Availability of IT or high tech equipment spares and skills, particularly in remote locations	Low	High	Subject	No	No	No	Yes	Yes				
28						Companies and Intellectual Property Commission	External	Statutory Body	Registration of Patents	High	Low	Context Setter	Yes	No	No	No	Yes	Yes
29	Legal	The regulatory framework in South Africa is considered satisfactory for business - legal requirements, standards and industry norms as they relate to the business to be determined and complied with. Elsewhere, project- or site- or country-specific regulations are also to be determined and addressed, as per the Corporate Risk Tolerance Matrix	External	Not Applicable	Not Applicable	Department of Labour	External	Regulatory Authority	OHS Act and Construction Legislation	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
30									Workman's Compensation	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
31									Authorisation	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
32									Compliance Monitoring	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
33									Incident Reports	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
34									Industrial Relations/ Labour Laws	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
35						Procurement Department	External	Regulatory Authority	Procurement Legislation and Standards	High	High	Key Player	Yes	No	No	No	Yes	Yes
36						Construction Industry Development Board (CIDB)	External	Standards Body	Industry Guidelines and Standards	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
37						Engineering Department	External	Regulatory Authority	Engineering Legislation and Standards	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
38						SABS	External	Standards Body	SANS Standards	Low	High	Subject	Yes	Yes	Yes	Yes	Yes	Yes
39						Local and Provincial Authorities	External	Regulatory Authority	Legislation and Authorisation	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
40						Other Standards Bodies	External	Standards Body	Other Standards	Low	High	Subject	Yes	Yes	Yes	Yes	Yes	Yes
41						Certification Bodies	External	Supplier/ Service Provider / Contractor	Certification Audits	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
42						SACPCMP	External	Statutory Body	Professional Registrations	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	Yes
43						South African Institute of Welding (SAIW)	External	Standards Body	Welding accreditation	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	Yes
44						Electrical Contractors Association of South Africa (ECASA)	External	Standards Body	Registration of Electricians	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	Yes
45						Engineering Council of South Africa (ECSA)	External	Standards Body	Engineering Standards	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	Yes
46						Federated Employer's Mutual (FEM)	External	Statutory Body	Workers Compensation	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
47						Department of Trade and Industry	External	Regulatory Authority	Import and Export Legislation issues	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
48						Department of Water Affairs	External	Regulatory Authority	Legislation addressing water management	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	Yes
49	Legal Service Providers	External	Supplier/ Service Provider / Contractor	Legal Counsel (Local and International)	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes					
50	Department of Finance	External	Regulatory Authority	Finance Related Legislation	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	Yes					

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level		Stakeholder Identification				Stakeholder Classification			Determining Compliance Obligation					
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Players?	Relevance to BMS?	Relevance to Intended Outcome	Is IAP Issue a Compliance Obligation?	
51	Environmental	BUL Home Office is Corporate Level shared (rented) space, based in water-scarce South Africa (Bedfordview, in Johannesburg). Project execution is conducted on client sites in selected geographic locations around the world, usually in accordance with country and/or local laws and client requirements. Accordingly, project or site specific environmental or ecological settings are to be determined and addressed.	External	Not Applicable	Not Applicable	Provincial and Local Authorities	External	Regulatory Authority	Local environmental legislation and compliance monitoring	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	
52						Department of Environmental Affairs	External	Regulatory Authority	Environmental legislation and compliance monitoring	High	Low	Context Setter	Yes	No	Yes	Yes	Yes	Yes
53						MR Group	Internal	Corporate Office	Sustainability Reporting	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
54						Clients	External	Customer (Client)	Compliance with Project Environmental Requirements (Including Client Environmental Authorisations)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
55	Internal Organisational Influences - Processes (Activities)	Product and Services: Provision of multidisciplinary Design, Engineering, Procurement and Project Implementation services for industrial projects focussed on power, oil & gas, mineral beneficiation and water solutions (desalination, supply and treatment) in the SADC countries and selected Sub-Saharan African countries. Organisational Activities: Core Activities: Business Development, Estimating, Project Delivery/ Execution; Commercial & Financial Management; Procurement; Human Resource Management, SHEQ Support, Secunda Oil and Gas (SOG) Operations, Electrical & Instrumentation (E & I) Operations; Water Solutions, Satellite Offices in Ghana and Mozambique. Outsourced Activities: Head Office space is rented and landlord provides the following: Such as Cleaning, Security, Landscaping, Air Conditioning, Construction, Lifts & Escalators, Parking Control, Waste Management, Marketing and Public Relations, Canteen Services.	Internal	Not Applicable	Not Applicable	MR Group	Internal	Corporate Office	Group Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
56						MRL Board	Internal	Investors (Current & Potential Shareholders)	BUL Performance Issues	High	High	Key Player	No	Yes	Yes	Yes	Yes	Yes
57						DRC Landlord	External	Supplier/ Service Provider / Contractor	Alignment of Lease Agreement issues with Group	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
58						Worley Parsons.	External	Strategic Partner	Strategic Business Partner	High	High	Key Player	No	Yes	Yes	Yes	Yes	Yes
59						Business Development Department (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
60						Estimating Department (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
61						Project Delivery Department (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
62						SOG Operations (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
63						E & I Operations (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
64						Power Program Directry (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
65						SHEQ	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
66						Human Resources Department (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
67						Finance Department (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
68						Commercial Department (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
69						Kusile - Wet Flue Gas Desulphurisation (3619)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
70						Kusile - Wet Flue Gas Desulphurisation (3619) Client (GE)	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
71						Kusile - Wet Flue Gas Desulphurisation	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
72						Kusile - Wet Flue Gas Desulphurisation Client (GE)	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level		Stakeholder Identification				Stakeholder Classification			Determining Compliance Obligation							
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Players?	Relevance to BMS?	Relevance to Intended Outcome	Is IAP Issue a Compliance Obligation?			
73	Internal Organisations - Processes (Activities)	Product and Services: Provision of multidisciplinary Design, Engineering, Procurement and Project Implementation services for industrial projects focussed on power, oil & gas, mineral beneficiation and water solutions (desalination, supply and treatment) in the SADC countries and selected Sub-Saharan African countries. Organisational Activities: Core Activities: Business Development, Estimating, Project Delivery/ Execution; Commercial & Financial Management; Procurement; Human Resource Management, SHEQ Support; Secunda Oil and Gas (SOG) Operations, Electrical & Instrumentation (E & I) Operations; Water Solutions, Satellite Offices in Ghana and Mozambique. Outsourced Activities: Head Office space is rented and landlord provides the following: Such as Cleaning, Security, Landscaping, Air Conditioning, Construction, Lifts & Escalators, Parking Control, Waste Management, Marketing and Public Relations, Canteen Services.	Internal	Not Applicable	Not Applicable	Medupi - Murray & Roberts & Acbm JV	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes			
74						Medupi - Murray & Roberts & Acbm JV Client - Acbm	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
75						Morupule A Refurbishment	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
76						Morupule A Refurbishment Client - Doosan (DHIC)	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
77						Kusile Power Project	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
78						Kusile Power Project Client - MHP SA	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
79						Kusile Power Project Client - Eskom	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
80						Medupi Power Project	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
81						Medupi Power Project Client - MHP SA	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
82						Medupi Power Project Client - Eskom	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
83						Takoradi MGO Storage & Distribution (Goi)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
84						Takoradi MGO Storage & Distribution (Goi) Client - Ghana Oil Company Limited	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
85						VOC SMEIP on Site installation SOG	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
86						VOC SMEIP on Site installation SOG Client - Sasol Secunda Synfuels	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
87						Coal Tar Filtration East (CTFE)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
88						CTFE Client - Sasol Secunda Synfuels	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
89						SOG Base (Overheads)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
90						SOG Base (Overheads) Client - Sasol	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
91						Sasol Train 17	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
92						Sasol Train 17 Client - Air Liquide	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
93						Murray & Roberts Water	Internal	Functional Unit or Project	Water Solutions	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
94						Genrec	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
95						Genrec Client -	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level		Stakeholder Identification				Stakeholder Classification			Determining Compliance Obligation				
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Players?	Relevance to BMS?	Relevance to Intended Outcome	Is IAP Issue a Compliance Obligation?
96	Internal Organisational Influences - People, Knowledge and systems	People, Knowledge and Systems: BUL is part of the leading and well-established multinational Corporate Level Group. BUL is committed to achieving zero harm to people, processes, property and the environment, in spite of the general industry skills shortage and consistent with Corporate Level values.	Internal	Not Applicable	Not Applicable	Union members	Internal	Employees	Employee Representation on Labour Matters	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
97									Good Relationships	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
98						Employees	Internal	Employees	Good Working Conditions	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
99									Performance	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
100									Compliance with Company Procedures and Values	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
101									Skills Development	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
102									Good Relationships	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
103									Zero Harm to People	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
104									Employees (Job Seekers)	External	Employees	Employment Opportunities	Low	High	Subject	Yes	No

**Annexure C: Stakeholder analysis - Operational unit (project) level**

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level		Stakeholder Identification				Stakeholder Classification			Determining Compliance Obligation				
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Player?	Relevance to EMS?	Relevance to Intended Outcome	Is IAP Issue a Compliance Obligation?
1	Political	BUL Home Office is based in politically stable and democratic South Africa, with generally a militant society. Within South Africa, the situation prevailing in project locations to be specifically evaluated. The Corporate Level Risk Tolerance Matrix to be applied when evaluating political situations in other geographic locations.	External	Applicable	Project located in Lephalale Local Municipality, which is part of Waterberg District Municipality. ANC led, plus EFF & DA presence. Tendencies to politicize project issues.	Political Parties	External	Community Member	Political influence, anti-competitive behaviour & corruption.	High	Low	Context Setter	No	No	Yes	No	Yes
2						Labour Unions	External	Labour Union	Political influence	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
3						SAPS	External	National Government Department	Public order policing during unrests.	Low	High	Subject	Yes	No	Yes	Yes	Yes
4						Employer Associations	External	Employers Union	Industry Issues	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
5	Economic	With Home Office in South Africa, the BUL, of part of the leading and well-established multinational Johannesburg Stock Exchange (JSE) listed engineering and construction services group (Corporate Level). The Engineering and Construction industry is highly competitive, and open to cyclic growth and recess, influenced by business and consumer confidence, interest rates and government programmes. Procurement is currently based on price and broad-based black economic empowerment (BBBEE) points, with functionality or quality having a minimum threshold. Currently, low South African and global economic growth outlook. BUL Strategic Objective: Growth in power/energy & industrial water markets in selected countries in Sub-Saharan Africa and beyond, organically and via acquisitions.	External	Applicable	Local economy: Mining and quarrying (71.4%), finance, insurance, real estate and business services (5.2%), wholesale and retail trade, catering and accommodation (4.4%), transport, storage and communication (4.4%), general government (4.3%), agriculture, forestry and fishing (3.9%), electricity, gas and water (2.8%). Project finances built into contractual agreements with client and service providers or contractors.	Local Service Providers	External	Supplier/ Service Provider / Contractor	Goods and Service Delivery	Low	High	Subject	No	Yes	No	No	Yes
6						Competitors	External	Competitor	Loss of scope work, due to poor HSE performance.	High	High	Key Player	No	Yes	No	No	Yes
7						Medupi Power Project Client - Eskom	External	Customer (Client)	HSE Program impacts on profits	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
8						Medupi Power Project Client - MHPSA	External	Customer (Client)	HSE Program impacts on profits	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
9	Sociological	BUL is part of the well-established multinational Corporate Level organization operating in the Southern African Development Community (SADC) countries and selected Sub-Saharan African countries. South Africa, is a multi-ethnic society with a wide range of cultures, religions and 11 languages, as well as a rich cultural heritage and discriminatory apartheid past – all constitutionalised. Project or site specific sociological issues to be determined and addressed accordingly.	External	Applicable	Low level of skills (low post-matric education). High unemployment.	Media	External	Media	BUL work or conduct ending up in the media space	High	Low	Context Setter	No	No	Yes	Yes	Yes
10						Expatriate Employees	Internal	Employees	Cultural issues with potential influence on HSE programs.	Low	High	Subject	Yes	No	Yes	Yes	Yes
11	Technological	Information Technology (IT) is a Corporate Level shared service and partially outsourced. As far as possible, uniquely tailored or company or project specific IT solutions to be avoided. As engineering and construction industry is open to cyclic growth and recess, technology advances also dictate changeover of IT equipment to latest, almost every 3 to 4 years. Prevent functionality overlaps in IT applications and incompatibility of IT systems by rationalising and standardisation, as far as possible. Adequate infrastructure capacity required to run operational systems in disaster mode. Innovative IT solutions to be applied, as far as possible. Internet connectivity required to access business management systems from anywhere. Identify, evaluate and mitigate current and future IT threats to	External	Applicable	Located about 300km north of the technologically advanced Gauteng Province.	MRL Information Technology (IT) Department	Internal	Functional Unit or Project	Group IT Strategy and Shared Service Issues	Low	High	Subject	Yes	No	Yes	Yes	Yes
12						Telecommunication and IT Service Providers - Dimension Data	External	Supplier/ Service Provider / Contractor	Telecommunication, IT Issues and collaborations	Low	High	Subject	Yes	No	No	Yes	Yes
13						Telecommunication and IT Service Providers - Dimension Data	External	Supplier/ Service Provider / Contractor	Availability of IT or high tech equipment spares and skills.	Low	High	Subject	No	No	No	Yes	Yes
14	Legal	The regulatory framework in South Africa is considered satisfactory for business - legal requirements, standards and industry norms as they relate to the business to be determined and complied with. Elsewhere, project- or site- or country-specific regulations are also to be determined and addressed, as per the Corporate Risk Tolerance Matrix	External	Not Applicable	Project construction environmental management plan (CEMP). Municipality by-laws. Unlicensed waste management facilities in the area.	Department of Labour	External	Regulatory Authority	OHS Act & Regulations	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
15									Workman's Compensation	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
16									Authorisations	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
17									Compliance Monitoring	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
18									Incident Reports	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
19									Registration of Electricians	High	Low	Context Setter	Yes	No	Yes	Yes	Yes
20									Industrial Relations/ Labour Laws	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
21						SABS	External	Standards Body	SANS Standards	Low	High	Subject	Yes	No	Yes	Yes	Yes
22						Limpopo Provincial Authorities	External	Regulatory Authority	Legislation and Authorisation at Provincial level	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
23						Waterberg District Municipality	External	Regulatory Authority	Legislation and Authorisation at district level	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
24	Lephalale Local Municipality	External	Regulatory Authority	Legislation and Authorisation at local level	High	High	Key Player	Yes	Yes	Yes	Yes	Yes					

Item Number	External and Internal Issues at Business Unit Level (BUL)			External and Internal Issues at Operational Unit Level		Stakeholder Identification				Stakeholder Classification			Determining Compliance Obligation				
	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Player?	Relevance to EMS?	Relevance to Intended Outcome	Is IAP Issue a Compliance Obligation?
25	Legal	The regulatory framework in South Africa is considered satisfactory for business - legal requirements, standards and industry norms as they relate to the business to be determined and complied with. Elsewhere, project- or site- or country-specific regulations are also to be determined and addressed, as per the Corporate Risk Tolerance Matrix	External	Not Applicable	Project construction environmental management plan (CEMP). Municipality by-laws. Unlicensed waste management facilities in the area.	Gauteng Provincial Authorities	External	Regulatory Authority	Legislation and Authorisation at provincial level for crossborder activities	High	Low	Context Setter	Yes	No	Yes	Yes	Yes
26						Other Standards Bodies	External	Standards Body	Other Standards	Low	High	Subject	Yes	No	Yes	Yes	Yes
27						Certification Bodies	External	Supplier/ Service Provider / Contractor	Certification Audits	Low	High	Subject	Yes	No	Yes	Yes	Yes
28						SACPCMP	External	Statutory Body	Professional Registrations	High	Low	Context Setter	Yes	No	Yes	Yes	Yes
29						Electrical Contractors Association of South Africa (ECASA)	External	Standards Body	Registration of Electricians	High	Low	Context Setter	Yes	No	Yes	Yes	Yes
30						Engineering Council of South Africa (ECSA)	External	Standards Body	Engineering Standards	High	Low	Context Setter	Yes	No	Yes	Yes	Yes
31						Federated Employer's Mutual (FEM)	External	Statutory Body	Workers Compensation	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
32						Medupi Power Project Client - ESKOM	External	Customer (Client)	Project owner and employer policies, procedures and EMP	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
33						Medupi Power Project Client - MHPSA	External	Customer (Client)	HSE Specifications	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
34									Contractual agreement	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
35						Murray & Roberts Limited	Internal	Corporate Office	Group HSE requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
36						Murray & Roberts Power & Water Platform	Internal	Corporate Office	Platform requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
37						Department of Environmental Affairs	External	National Government Department	NEMA and Sectorial Environmental Legislation	High	Low	Context Setter	Yes	No	Yes	Yes	Yes
38	Environmental	BUL Home Office is Corporate Level shared (rented) space, based in water-scarce South Africa (Bedfordview, in Johannesburg). Project execution is conducted on client sites in selected geographic locations around the world, usually in accordance with country and/or local laws and client requirements. Accordingly, project or site specific environmental or ecological settings are to be determined and addressed.	External	Applicable	Home for 40% of South Africa's coal reserves. Work undertaken on already terraced ground, within fenced boundary.	Adhoc Service providers /Subcontractors	External	Supplier/ Service Provider / Contractor	Compliance with Project Environmental Requirements (Including Client Environmental Authorisations)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
39						Project construction teams	Internal	Functional Unit or Project	Environmental Aspects from construction activities	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
40						Medupi Power Project Client - MHPSA	External	Customer (Client)	Environmental performance	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
41						Medupi Power Project Client - ESKOM	External	Customer (Client)	Environmental performance	High	High	Key Player	Yes	Yes	Yes	Yes	Yes
42						Department of Environmental Affairs	External	Regulatory Authority	Environmental legislation and compliance monitoring	High	Low	Context Setter	Yes	No	Yes	Yes	Yes
43						MR Group	Internal	Corporate Office	Sustainability Reporting	High	High	Key Player	Yes	Yes	Yes	Yes	Yes

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	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Player?	Relevance to EMS?	Relevance to Intended Outcome	Is IAP Issue a Compliance Obligation?	
44	Internal Organizational Influences - Processes (Activities)	Product and Services: Provision of multidisciplinary Design, Engineering, Procurement and Project Implementation services for industrial projects focussed on power, oil & gas, mineral beneficiation and water solutions (desalination, supply and treatment) in the SADC countries and selected Sub-Saharan African countries. Organisational Activities: Core Activities: Business Development, Estimating, Project Delivery/ Execution, Commercial & Financial Management, Procurement, Human Resource Management, SHEQ Support, Secunda Oil and Gas (SOG) Operations, Electrical & Instrumentation (E & I) Operations; Water Solutions, Satellite Offices in Ghana and Mozambique. Outsourced Activities: Head Office space is rented and landlord provides the following: Such as Cleaning, Security, Landscaping, Air Conditioning, Construction, Lifts & Escalators, Parking Control, Waste Management, Marketing and Public Relations, Canteen Services.	Internal	Applicable	BUL is a subcontractor to one one of the companies contracted to Eskom, the project owner, for the Medupi boiler packages comprising 6 units of about 800 megawatt electrical (MWe) each. Scope of work: supply, fabrication and erection of all the structural steel, ducting and bunkers for the boiler structure and auxiliary bay, as well as the installation of the complete boiler units and mechanical installations. Similar scope at Kusile. These two power plants represent almost 25% of the current Eskom's generating capacity and are the largest projects in South Africa. More than half a million tonnes of steel expected to be installed on both projects.	MRL Board	Internal	Investors (Current & Potential Shareholders)	MRPE HSE Performance Issues	High	High	Key Player	No	Yes	Yes	Yes	Yes	
45						Power Program Directory (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
46						SHEQ (Corporate)	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
47						QA/QC Department (Project)	Internal	Functional Unit or Project	Management System Interactions	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
48						Human Resources Department (Corporate)	Internal	Functional Unit or Project	Human Resource issues	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
49						Federated Employer's Mutual (FEM)	External	Supplier/ Service Provider / Contractor	Injuries on duty	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
50						EOH	External	Supplier/ Service Provider / Contractor	Injuries on duty, medical surveillance, primary health on site and hygiene surveys	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
51						ICAS	External	Supplier/ Service Provider / Contractor	Employee assistance programmes	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
52						Averda	External	Supplier/ Service Provider / Contractor	Waste management	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
53						Medupi Power Project Client - Eskom	External	Supplier/ Service Provider / Contractor	Client Provided Services (Waste management, water supply, security, electricity supply, ablution facilities, STP)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
54						Medupi Power Project Client - MHPSA	External	Supplier/ Service Provider / Contractor	Client provided services ( scaffolding, plant and equipment, PPE, Catering services, life lines and rope access, Consumables, Staff Transportation, Logistics, Security, etc)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
55						Barnard Hughes (Labour Brokers)	External	Supplier/ Service Provider / Contractor	Supply of QC QA inspectors	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
56						EaziAccess Rentals	External	Supplier/ Service Provider / Contractor	Supply of plant and equipment and two operators	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
57						Skyjacks	External	Supplier/ Service Provider / Contractor	Supply and maintenance of TSP	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
58						Skyriders	External	Supplier/ Service Provider / Contractor	Rope access	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
59						Time and Data Sequel (TDS)	External	Supplier/ Service Provider / Contractor	Time and data management	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
60						Kal Tyres	External	Supplier/ Service Provider / Contractor	Tyre maintenance service	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
61						Oikol	External	Supplier/ Service Provider / Contractor	Removal of used oil	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
62						NLTI	External	Supplier/ Service Provider / Contractor	Load testing and recertification	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
63						Emalini	External	Supplier/ Service Provider / Contractor	Mechanical access	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
64						Tera Machine Hire	External	Supplier/ Service Provider / Contractor	Water supply and dust suppression	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
65						Prestige	External	Supplier/ Service Provider / Contractor	Sanitary services	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
66						Eastgate Plumbing and Hardware cc	External	Supplier/ Service Provider / Contractor	Plumbing	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
67	VSA Mining	External	Supplier/ Service Provider / Contractor	Shaft Alignment	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes					
68	Eqstra	External	Supplier/ Service Provider / Contractor	Equipment repairs	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes					
69	Imperial Car Hire	External	Supplier/ Service Provider / Contractor	Fleet hire	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes					
70	Midas	External	Supplier/ Service Provider / Contractor	Equipment and parts supply	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes					
71	Recite	External	Supplier/ Service Provider / Contractor	Collection of spent fluorescent tubes	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes					
72	Buhle waste	External	Supplier/ Service Provider / Contractor	Medical waste	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes					
73	Training Department	External	Supplier/ Service Provider / Contractor	External HSE training	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes					



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	Dimension	External or Internal Issue Description	Issue Type, Internal or External?	BUL Issue Applicable?	Functional Unit or Project External & Internal Issues (Additional)	Stakeholder Name	Internal or External Stakeholder?	Stakeholder Category	Stakeholder Issues or Requirements (Needs & Expectations)	Power	Interest	Stakeholder "Label"	Legal & Other?	Key Player?	Relevance to EMS?	Relevance to Intended Outcome	Is IAP Issue a Compliance Obligation?	
74	Internal Organisational Influences - Processes (Activities)	Product and Services: Provision of multidisciplinary Design, Engineering, Procurement and Project Implementation services for industrial projects focussed on power, oil & gas, mineral beneficiation and water solutions (desalination, supply and treatment) in the SADC countries and selected Sub-Saharan African countries. Organisational Activities: Core Activities: Business Development, Estimating, Project Delivery/ Execution; Commercial & Financial Management, Procurement Human Resource Management, SHEQ Support, Secunda Oil and Gas (SOG) Operations, Electrical & Instrumentation (E & I) Operations; Water Solutions, Satellite Offices in Ghana and Mozambique. Outsourced Activities: Head Office space is rented and landlord provides the following: Such as Cleaning, Security, Landscaping, Air Conditioning, Construction, Lifts & Escalators, Parking Control, Waste Management, Marketing and Public Relations, Canteen Services.	Internal	Applicable	BUL is a subcontractor to one one of the companies contracted to ESKOM, the project owner, for the Medupi boiler packages comprising 6 units of about 800 megawatt electrical (MWe) each. Scope of work: supply, fabrication and erection of all the structural steel, ducting and bunkers for the boiler structure and auxiliary bay, as well as the installation of the complete boiler units and mechanical installations. Similar scope at Kusile. These two power plants represent almost 25% of the current Eskom's generating capacity and are the largest projects in South Africa. More than half a million tonnes of steel expected to be installed on both projects.	Drager	External	Supplier/ Service Provider / Contractor	Calibration of gas monitors	Low	High	Subject	Yes	No	Yes	Yes	Yes	
75						Gwycor	External	Supplier/ Service Provider / Contractor	Service and supply of fire extinguishers	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
76						Fire Department	External	Inspection Authority/ Certification Body	Inspection and certification	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
77						OASIS	External	Supplier/ Service Provider / Contractor	Potable water supply	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
78						ESKOM	External	Customer (Client)	Emergency Response	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
79						Project construction teams	Internal	Functional Unit or Project	Medical surveillance arrangements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
80						Medical Centres	External	Supplier/ Service Provider / Contractor	IOD, Emergency services, medical treatment	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
81						Human Resources Department (Project)	Internal	Functional Unit or Project	Human Resource issues	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
82						Project Site Director	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
83						Welfare Facilities	Internal	Functional Unit or Project	Welfare facilities	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
84						Procurement Department	Internal	Functional Unit or Project	Delivery of Intended Outcomes (Performance, Compliance, Achieving Set Targets)	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
85						Commercial Department (Project)	Internal	Functional Unit or Project	Project commercial issues	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
86						Kusile Power Project (MRPE)	Internal	Functional Unit or Project	Alignment and sharing of lessons learnt	Low	High	Subject	Yes	No	Yes	Yes	Yes	Yes
87						Medupi Power Project Client - MHPSA	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
88						Medupi Power Project Client - ESKOM	External	Customer (Client)	Client Requirements	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	Yes
89	Internal Organisational Influences - People, Knowledge and systems	People, Knowledge and Systems: BUL is part of the leading and well-established multinational Corporate Level Group. BUL is committed to achieving zero harm to people, processes, property and the environment, in spite of the general industry skills shortage and consistent with Corporate Level values.	Internal	Applicable	Not Applicable	Union members	Internal	Employees	Employee Representation on Labour Matters	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
90							Internal		Good Relationships	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
91						Employees	Internal	Employees	Good Working Conditions	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
92							Internal		Performance	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
93							Internal		Compliance with Company Procedures and Values	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
94							Internal		Skills Development	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
95							Internal		Good Relationships	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	
96							Internal		Zero Harm to People	High	High	Key Player	Yes	Yes	Yes	Yes	Yes	