

An assessment of the effectiveness of management review as an ISO 14001:2004 continual improvement element: an Eskom Distribution case study

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ABSTRACT

Eskom Holdings SOC Limited (referred to as Eskom), a public state owned company, is required to continually demonstrate environmental duty of care and report on its environmental performance. In furthering its commitment to sustainable development and in line with environmental compliance of its activities, Eskom is planning to have the Distribution Division certified against the International Organisation for Standardization (ISO) 14001:2004 environmental management system (EMS) standard by 2014. In general, management review may quickly turn into a dry review of the items on the agenda, done only to show an auditor the review was held. As such, the aim of this study was to assess the effectiveness of management reviews as one of the key continual improvement elements of the ISO 14001:2004 environmental management system within Eskom Distribution: Western Region.

This research has been designed to take place in three stages. These stages are planning, execution and publication, and preparing the dissertation for marking. The research methodology included a literature study on various national and international articles and journals on EMSs that relate to environmental performance. The databases of Eskom Distribution: Western Region – i.e. the management review presentation results for the 2008/09, 2009/10 and 2010/11 financial years, key significant environmental aspects for the Technical Service Centres (TSCs) and Minor/Major Engineering Works (MEW), key performance indicators (KPIs), Risk Audit System (RAS) results, and results of the external EMS audit conducted from 23–25 April 2007 were used for this research. Questionnaires were sent to the TSCs' senior supervisors and Safety, Health, Environment and Quality (SHEQ) management.

An analysis of the questionnaires completed by the TSC senior supervisors showed that all the participants have seen an improvement in environmental performance due to annual management reviews, except TSC11, who have not seen management review results.

It can be concluded from the results of the SHEQ management questionnaires that an improvement (continual improvement as per the ISO 14001 requirement) was observed. The improvements were identified through improved processes, improved gap analysis, increased environmental awareness, and addressing risks.

Most of the ISO 14001:2004 requirements for the management review for all financial years covered in this study were met. In terms of the objectives, targets and KPIs, Eskom Distribution: Western Region performed effectively and most of the outcomes were implemented according to the recommendations.

Further, based on the external audit conducted from 23 to 25 April 2007, it is clear that Eskom Distribution: Western Region conformed to the minimum requirements of the ISO 14001:2004 EMS. Their management reviews also met all requirements of the ISO 14001:2004 relating to management review. This was proven by minutes of previous meetings that covered all the necessary issues that were audited. Thus, the existence of management reviews contributed towards ensuring that the ISO system was scrutinised and improved where it worked, and that aspects that did not work well were removed.

Keywords: duty of care, environmental performance, environmental management system, effectiveness, management review, TSC senior supervisors, SHEQ management

PREFACE

The research proposal for this study was done at the time of my employment at Eskom Distribution: Western Region. The aim of the study was to verify the effectiveness of the management reviews that took place within the distribution division. Certain limitations were experienced during the study and included:

- ❖ The study only investigated the effectiveness of the implementation of the management review meeting decisions reflected on the presentations for the Technical Service Centres (TSCs) and Minor/Major Engineering Works (MEW) from the 2008/9–2010/11 financial years.
- ❖ The locality map of the TSC was under review at the time of finalising this study.
- ❖ The study only considered the key departments that deal with significant environmental aspects from a management review perspective, such as the TSCs and MEW.
- ❖ The study only included three financial years (2008/09, 2009/10, and 2010/11) to determine the effectiveness of the management reviews, and no external audit was conducted in these financial years. The external audit was conducted during the 2007/08 financial year which was outside the financial years that were studied (2008/09; 2009/10; and 2010/11) for this paper.
- ❖ Of the 22 questionnaires issued to the SHEQ management, only six (37%) were returned, and of the 18 questionnaires issued to the TSC senior supervisors, only eight (44%) were returned; this may have an impact on the credibility of the results, as the data represents limited views. However, for the purpose of the study it does provide an indication that has statistical relevance, as it was done for a small group of people (Dawson, 2009:48).
- ❖ At the inception of this dissertation in June 2011, there were 32 TSCs spread across six Field Services Centres (FSCs), and only three TSCs were selected and three questionnaires per FSC were handed out through random sampling.
- ❖ No interviews took place, as the target group who did not send my questionnaires back were not available for interviews either. Several requests in the form of e-mails were sent to them (please refer to Annexure 2 for proof). Phone calls were also made, but I could not secure appointments.
- ❖ The Risk Audit System (RAS) audit was not done in the 2008/09 financial year, and therefore I could only analyse the performance over the 2009/10–2010/11 financial years.

However, despite the challenges and/or limitations I have encountered, I would like to thank Professor FP Retief and his selection team for believing in me and selecting me as one of the candidates for the Master's Degree in Environmental Management. I would also like to thank all the lecturers involved in this degree, as they kept on stimulating my mind and indirectly showing me that I am in the right field of study. I would also like to give my gratitude to the supervisor of my dissertation, Jan-Albert Wessels, for his undivided guidance, care and professionalism in working on this dissertation. My mentor, Dave Lucas from Eskom, who has been by my side, giving guidance and support, should also receive many thanks. I would also like to thank everyone who responded to my questionnaire. I would have not been able to finalise this dissertation without their feedback. I would like to thank the following people who provided me with background data: Astrid October, Siyavuya Kotyi, Bradley Asia, Donald Matjuda, Rudi Kruger, Kathy Marsburg and Nonkululeko Beyi for providing me with the map, as well as Daphney Ramaphosa and Sandile Nkosi for their assistance in formatting certain parts of my dissertation. Furthermore, I would like to thank my bursars, North-West University, for sponsoring my first year of study and Eskom Holdings SOC Limited for my second and third years of study.

Thank you to my environmental colleagues at Eskom Distribution: Western Region for their support when I was working in Cape Town. I would like to express my appreciation and thanks to my nieces Sisanda Ngquzuka and Aziwe Hlongwane for their understanding when I had to leave them to study at work (Eskom), sometimes only seeing them in the mornings when I dropped them off at school. I would also like to thank my mother Ntombifikile Clara Hlongwane for her constant support, prayers and believing in me, as well as my spiritual family for their prayers, support, believing in me and looking after my nieces when I was not there.

I salute you all!

ABBREVIATIONS AND ACRONYMS

BA	basic assessment
CNC	Customer Network Centre
COW	Clerk of Works
CO ₂	carbon dioxide
CTAD	Corporate Technical Audit Department
DEAC	Distribution Environmental Advisory Committee
DEAT	Department of Environmental Affairs and Tourism (until 2009) – after that Department of Environmental Affairs or DEA)
DESD	distribution environmental screening document
DME	Department of Minerals and Energy (until 2009 – after that Department of Mineral Resources or DMR)
Dx	distribution
DWA	Department of Water Affairs
EA	environmental authorisation
EA	European Cooperation for Accreditation
EAP	environmental assessment practitioners
ECO	environmental control officer
EHS	environment, health and safety
EIA	environmental impact assessment
ELC	Environmental Liaison Committee
EMP	environmental management programme
EMS	environmental management system
EPA	Environmental Protection Act
EPI	environmental performance indicator
EWT	Endangered Wildlife Trust
FSC	Field Services Centre
GIT	graduate in training
GRI	Global Reporting Initiative

HR	human resource
HV	high voltage
HWC	Heritage Western Cape
I&APs	interested and affected parties
IBM	International Business Machines
ISO	International Organization for Standardization
IT	information technology
KPI	key performance indicator
LD	land development
Ltd	limited
LV	low voltage
MEW	Major/Minor Engineering Works
MOU	memorandum of understanding
Mt	Mount
MV	medium voltage
MWh	Megawatt per hour
m ³	cubic metres
N/A	not applicable
NCR	non-conformance report
NDEMS	National Database on Environmental Management Systems
NEMA	National Environmental Management Act (Act 107 of 1998)
OHD	Occupational Health Dashboard
OHSA	Occupational Health and Safety Act (Act 85 of 1993)
PC	project coordinator
PCB	polychlorinated biphenyl
PDCA	Plan, Do, Check and Act
PELJ	Potchefstroom Electronic Journal
PM	project manager
Pty	proprietary

RAS	risk audit system
RoD	record of decision
SA	South Africa
SAHRA	South African Heritage Resources Agency
SAP	Systems, Applications and Products in data processing
SABS	South African Bureau of Standards
SANS	South African National Standards
SEA	senior environmental advisor
SHEQ	safety, health, environment and quality
SOC	state-owned company
T&D	training and development
TSC	Technical Service Centre
TSO	technical service officer
UN	United Nations
UNEP	United Nations Environment Programme
US	United States
UNGC	United Nations Global Compact
US\$	United States Dollar
VOC	volatile organic compound
WBCSD	World Business Council on Sustainable Development
WCOU	Western Cape Operating Unit
WWF	World Wildlife Fund
%	Percentage

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CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT

1.1 Introduction

Eskom plays a central role as an enabler of the government's vision and supporter of economic growth in South Africa (SA) (Department of Minerals and Energy (DME), 2008:2–3, 7; 2009:4; Eskom, 2011:3). The livelihood of all South Africans is dependent on the quality of the environment, and Eskom's operations are also dependent on this environment (Eskom News, 2012:40).

Through the way Eskom conducts its business of generating, transmitting and distributing electricity, it impacts the environment. Eskom's environmental strategy is to ensure a culture of environmentally responsible behaviour across the business. It continues to ensure it operates as a responsible corporate citizen in South Africa and therefore has an overall commitment to environmental duty of care (Eskom, 2012:40; Eskom 2011:33, 112; South Africa, 2011:28, 63).

For Eskom to be recognised as a world-class utility through its environmental management practices and environmental duty of care, the ISO 14001:2004 environmental management system standard is adopted to ensure appropriate systems and practices are adopted. One of Eskom's eight strategic imperatives is "reducing our environmental footprint and pursuing low-carbon growth opportunities" (Eskom, 2013:85).

The utility's overarching environmental objectives (Eskom 2013:78, 79, 80) are as follows:

- **Avoid harm to the natural environment, minimising financial and legal liabilities** through effective leadership and appropriate governance **structures with competent skills.**
- Achieve **legal compliance to** environmental legislation as a minimum requirement in all activities through effective **management systems, monitoring, reporting and research.**
- **Reduce particulate and gaseous emissions** to minimise the impact on **human health** and complying with regulated emission standards.
- **Reduce freshwater usage and eliminate liquid effluent discharge** to avoid impacting **water resources**, including groundwater, through effective water management processes and the use of mine water.

- Enhance efficiency of **waste** management through **reduction, reuse and recycling practices**.
- **Minimise the impact** of its activities on **ecosystems** and **enhance ecosystem services** through responsible land management practices.

One of the key mechanisms to achieve these six objectives is through the effective development, implementation and maintenance of environmental management systems, and ensuring the robustness and effectiveness of the environmental management systems through obtaining ISO 14001 certification (Eskom, 2013:80).

A secondary benefit of the approach taken by Eskom for ISO 14001 certification is the contribution it makes to Eskom's approach to integrated reporting (Eskom, 2013:66, 80, 87). Eskom was one of the first signatories to the United Nations Global Compact (UNGC) in 1999, and is committed to its principles as a LEAD participant (Eskom 2013:80). Eskom continues to subscribe to the UNGC principles as well as its role as a UNGC LEAD member – improving sustainability performance. In addition, Eskom has also actively participated in other important UN initiatives, such as the CEO Water Mandate, Caring for Climate as well as the Sustainable Energy for All initiative. Eskom applied Global Reporting Initiative (GRI) G3 principles in compiling its annual integrated reports (Eskom, 2013:131).

These principles ensure that the company incorporates the views of its stakeholders, as well as internal planning, reporting and risk management processes (Eskom, 2013:19). ISO 14001 environmental management systems (EMSs) provide the platform for the achievement of the above (Eskom, 2013:80, 131).

Eskom Holdings SOC Limited (Eskom) secured funding for its multibillion rand construction programme for a number of projects to ensure the supply of reliable electricity for SA that underpins economic growth. In terms of the National Environmental Management Act (NEMA) (Act 107 of 1998:108), Eskom has to continually demonstrate environmental duty of care and report on its environmental performance. In furthering its commitment to sustainable development and ensure the environmental compliance of its activities, Eskom is planning to have the Distribution Division certified against the ISO 14001:2004 EMS standard by 2014.

This study has five (5) chapters, which are set out as follows:

Chapter 1: Introduction and problem statement – This chapter introduces the study, giving reasons for and the background of the study, the problem statement, the research aim, research questions, and the hypothesis. It also gives a brief explanation of the key departments that deal with significant environmental aspects from a management review perspective within Eskom Distribution: Western Region.

Chapter 2: Research design and methodology – This chapter details the research design and methodology of the study, methods used for data collection, and methods used for data analysis.

Chapter 3: Literature review – This chapter reviews literature on the effectiveness of management reviews and the influence of senior management who review the ISO 14001:2004 system.

Chapter 4: Analysis and interpretation – This chapter analyses and interprets the data that was used in putting together this research study. The ISO 14001 element 4.6 requirements were used to determine if management reviews conducted by the Eskom Distribution: Western Region address EMS element 4.6 requirements. The analyses were done for the questionnaires that were sent to the senior supervisors at the Technical Service Centres (TSCs) and Safety, Health, Environment and Quality (SHEQ) management. Analyses were also done on the management review presentations, key performance indicators (KPIs), the Risk Audit System (RAS) audits that were conducted between the 2008 and 2011 financial years, as well as the external audit results of an audit that was conducted from 23 to 25 April 2007 (outside the 2008/09 – 2010/11 financial years that form the basis of this study). There was no external ISO 14001:2004 audit that was conducted between the 2008 and 2011 financial years.

Chapter 5: Conclusion and recommendations – This chapter concludes and summarises the findings based on the research sub-questions.

1.2 Problem statement

The EMS management review is designed to ensure on-going and practical involvement by the top management of an organisation. It offers leadership the opportunity to determine if the current EMS is suitable, adequate and effective for its intended purposes and what decisions or actions relative to the EMS need to be made to ensure continual improvement (Joint Service Pollution Prevention and Sustainability Library, 2012). According to Pun & Hui (2001:334) and Thompson, *et al.* (2008:733), management review requires the review of the EMS by management for its continuing appropriateness and success. However, in general management review can quickly turn into a dry review of the items on the agenda, done only to show an auditor that the review was held (McDonald *et al.*, 2003:72). Therefore, this study has assessed the effectiveness of management reviews as an ISO 14001:2004 continual improvement element. It is an Eskom Distribution Division case study, specifically focusing on TSCs and MEW.

1.3 Research aim

The aim of this study is to assess the effectiveness of management reviews as one of the key continual improvement elements of the ISO 14001:2004 environmental management system within Eskom Distribution: Western Region.

1.4 Research questions

The main question is as follows:

What effect do management reviews have on the continual improvement of the implementation of the ISO 14001:2004 environmental management system standard within Eskom Distribution: Western Region?

The following research sub-questions were set to achieve the aim:

1. Do management reviews conducted by the Eskom Distribution: Western Region address EMS element 4.6 requirements?

2. Do management reviews identify key significant environmental aspects adequately?
3. To what extent is SHEQ management involvement and leadership drive evident in terms of the management review and within the TSCs and MEW?
4. To what extent do management reviews contribute to the continual improvement of the implementation of the ISO 14001:2004 environmental management system standard within Eskom Distribution: Western Region?

1.5 Hypothesis

Due to the exploratory research methodology of this study, a hypothesis may not be drawn. Thus, only after data analyses and interpretation can one tell if management reviews are effective or not within Eskom Distribution: Western Region.

1.6 A brief explanation of the key departments that have significant environmental aspects from a management review perspective

The key departments that deal with significant environmental aspects from a management review perspective are as follows:

1.6.1 Major Engineering Works

Vision:

MEW management and staff commit to maintain an effective quality management system that conforms to the requirements of the ISO 9001:2008, so as to assure an optimal level of service delivery and customer satisfaction.

Their policy is to construct 66 kV up to 132 kV overhead power lines and substations that comply with project engineering specification, taking all legal and statutory requirements into account.

In supporting their quality policy MEW is committed to:

- Do every task right the first time with the available resources to meet customer requirements
- Ensure that no barriers of communication exist at any level of our organisation
- Provide a framework for establishing and reviewing quality objectives for suitability
- Develop all our staff to the highest level of competency possible
- Treat the safety of each individual as of paramount importance
- Ensure minimum impact on the environment with our activities

1.6.2 Minor Engineering Works

Mission:

MEW is to manage the provision of efficient and effective management of specialised maintenance, repair and build resources in an environmentally friendly and safe manner, in order to satisfy the customer and business needs. In summary, Minor Engineering Works:

- Execute Capex system power line projects.
- Execute Capex system substation station projects.
- Execute Opex system projects throughout the province level.
- Execute emergency projects and breakdowns throughout the province.

1.6.3 Capital Programme

Vision:

Capital Programme aspires to be a world leader in project management by safely delivering quality products on time and within budget.

Mission:

Their mission is to maximise shareholder return on projects by:

- Employing well-trained, professional and competent project management staff
- Continuously utilising cutting-edge technology and support systems
- Optimising resources through professional contracts management
- Operations supported by streamlined and effective processes
- Surpassing safety and environmental legislation.

Core values:

- Customer service
- Professionalism
- Results-focused
- Deliver on commitments
- Competency
- Integrity
- Innovation

1.6.4 Project Engineering

Mission:

Project engineer the choice of technologies available and advise, approve, manage and design medium voltage (MV) and low voltage (LV) systems to suit Eskom Distribution networks.

Vision:

Project Engineering is divided into Project Engineering High Voltage (HV) and Project Engineering MV. Project Engineering is accountable for the planning, design and technical quality assurance of the distribution and sub-transmission network of both power and control plant according to national standards and specifications.

1.6.5 TSCs

Mission:

- Operating, building, maintaining and repairing the electrical network in order to promote safety, satisfy our customers and achieve business and statutory requirements.
- Promoting Exceptional Customer Service.

1.7 Conclusion

The vision of the South African government for economic growth and the role of Eskom in meeting this vision have been highlighted. The environment we live in provides the platform for Eskom to operate its main activity – the generation of electricity. Eskom has a responsibility to commit to environmental duty of care, not just nationwide, but also internationally. As such, Eskom has adopted the ISO 14001:2004 environmental management system standard to ensure that appropriate systems and practices are adapted.

This first chapter has introduced the problem statement, research questions, aim, hypothesis that is exploratory and limitations of this study. For background purposes, a brief explanation was provided of the key departments that deal with significant environmental aspects from a management review perspective, such as the TSCs, MEW, Project Engineering and Capital Programme (Project Management), as well as the mandate they have within Eskom Distribution: Western region. The second chapter will look at the research design and methodology.

CHAPTER 2: RESEARCH DESIGN AND METHODOLOGY

2.1 Introduction

The research design is believed to be a strategic framework for action that functions as a connection between research questions and the execution of the research (Durrheim, 2006:34). There are three different ways in which types of research have been eminent: 1. exploratory or deductive research; 2. applied and basic research; and 3. quantitative and qualitative research. Exploratory research has to do with research where the researcher is unfamiliar with the area she or he is researching (Mitchell, 2005:166). Moreover, Durrheim (2006:44) and Mitchell, (2005:166), state that exploratory research is used on investigations that are unfamiliar and unknown; they employ an open, flexible and inductive approach of research as they attempt to look for new insights into phenomena. Durrheim (2006:44) gives an example of interviews with key informants (people who manage shelters, etc.) that could be used to detect the kinds of health and safety challenges facing homeless people in an area where one resides to illustrate the concept of exploratory research. This study has followed the exploratory research method, and thus the results can only be determined once analysis and interpretation has been done.

2.2 Research design

This study has been designed to follow three stages of research, as adopted from Durrheim (2006:34):

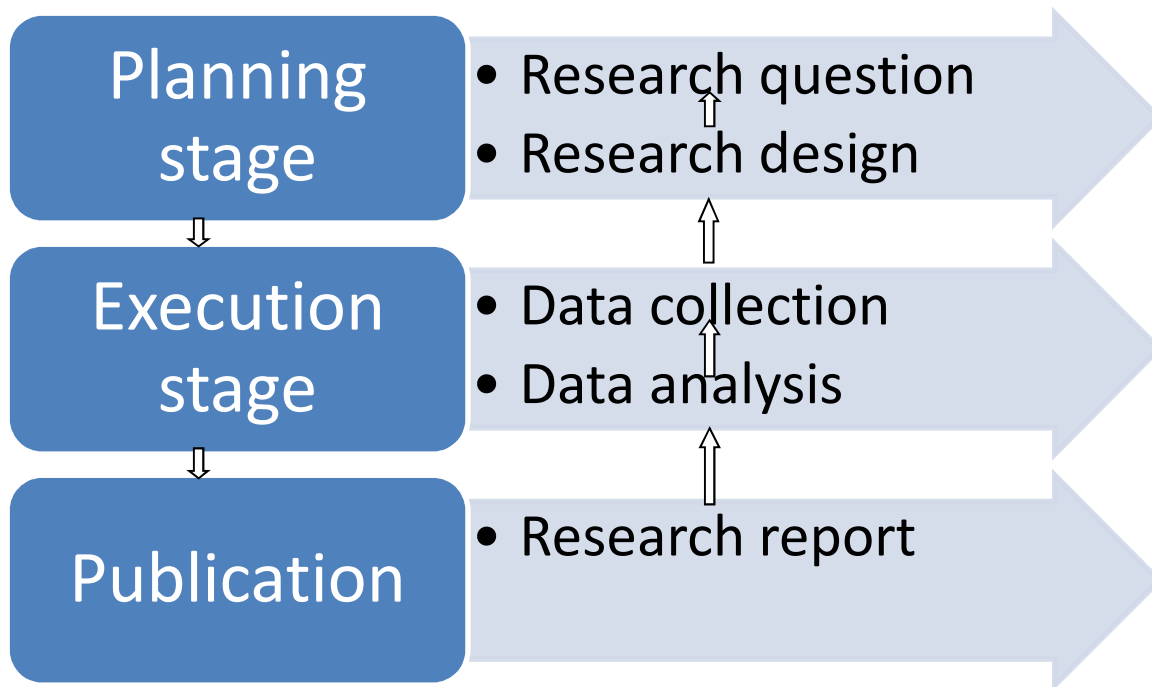


Figure 2-1: Stages of research followed

2.3 Research methodology

The research methodology included a literature study on various national and international articles and journals on EMSs. The information was specifically related to the implementation of EMSs in accordance with ISO 14001, as well as the role of management in effective management system deployment. The ISO 14001 element 4.6 requirements were expended to determine if management reviews conducted by the Eskom Distribution: Western Region address EMS element 4.6 requirements. The databases of Eskom Distribution: Western Region – the management review presentation results for the 2008/09, 2009/10 and 2010/11 financial years, key significant environmental aspects for the TSCs and MEW, KPIs, RAS results and the results of the external EMS audit conducted from 23 to 25 April 2007 – were used for this research.

Furthermore, questionnaires were sent (via e-mail and hand-delivered – for all the participants within Brackenfell Complex) to the TSC senior supervisors and SHEQ management. Some responses were sent via e-mail and others hand-delivered. Questionnaires were sent to all members of the SHEQ management who featured in the 2008/09, 2009/10 and 2010/11

financial years' minutes. However, for the TSCs, random sampling was done, as they were too many to all receive questionnaires (please refer to the research sub-questions 1 and 3 below for more information on how sampling was done). All these Eskom Distribution: Western Region sources were used to obtain information and test whether management reviews, as one of the ISO 14001:2004 elements, conducted by Eskom Distribution: Western Region were effective. A schematic representation of the research methodology is illustrated in figure 2-2 below.

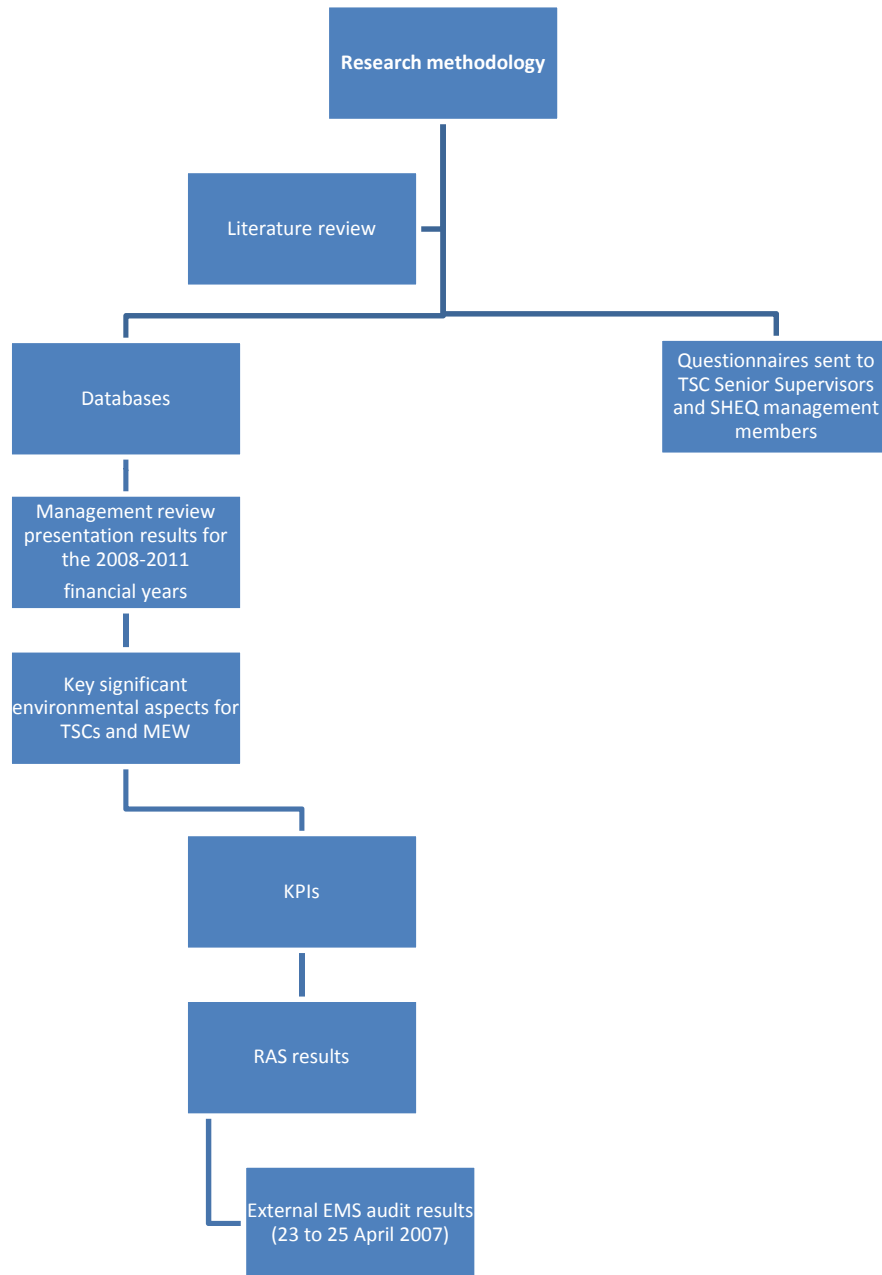


Figure 2-2: A schematic representation of the research methodology

2.4 Methods used for data collection

The research is divided into the following main task groups:

Background

- a) Literature review.

Research sub-question 1

- a) As part of Chapter 1, a brief explanation was given of the key departments that deal with significant environmental aspects from a management review perspective, such as the TSCs, MEW, Project Engineering and Capital Programme (Project Management), as well as the mandate they have within Eskom Distribution: Western region.
- b) The ISO 14001 element 4.6 requirements were extracted from the SANS 14001: 2005 report and tabulated for analysis.

Research sub-question 3

- a) A survey was conducted through a questionnaire (that was coded for anonymous reasons): questionnaires were distributed to all the management members of Eskom Distribution: Western Region's SHEQ Committee (they were 22 at the inception of this thesis in June 2011). If additional information was required, telephonic interviews were to be conducted with the SHEQ management.
- b) A survey was conducted through a questionnaire (that was coded for reasons of anonymity): questionnaires were only distributed to the TSC and MEW supervisors and/or managers of Eskom Distribution: Western Region's. Due to the fact that at the inception of this dissertation in June 2011, there were 32 TSCs spread across six Field Services Centres (FSCs), only three TSCs and per FSC were selected and three questionnaires per TSC were distributed through random sampling. However, random sampling was only done where there were more than three TSCs per FSC. The FSCs were Khayelitsha, which consisted of only two TSCs at the time, Table View, which consisted of four TSCs, West Coast, which consisted of eight TSCs, Bellville, which consisted of three TSCs, George, which consisted of nine TSCs, and

Worcester, which consisted of seven TSCs (please refer to annexure 3 for the list and geographical location of these TSCs). Only senior supervisors of the TSCs were surveyed. If additional information was required, telephonic interviews were to be conducted for the randomly selected TSCs.

2.5 Methods used for data analysis

Research sub-question 2

- a) Management review presentations from 2008/9–2010/11 were assessed and compared against the key significant environmental aspects, and their effectiveness and implementation in the TSCs and MEW were investigated. Effectiveness was based on the rich statements from the questionnaires.
- b) Previous management reviews, conducted between the 2008/9 and 2010/11 financial years were reviewed in terms of meeting the ISO 14001:2004 requirement, the outcomes and the actual implementation of recommendations for continual improvement. Actual implementation was measured by the achievement of KPIs.

Research sub-question 4

- a) Based on the outcome of the management reviews conducted between the 2008/9 and 2010/11 financial years, this study determined whether the management reviews added value and led to continual improvement in the environmental performance of the TSCs and MEW and/or to the Eskom Distribution: Western Region as a whole.
- b) The study analysed the results of the external EMS audits conducted during the 2007/8 financial year (even though they were outside the 2008/9, 2009/10 and 2010/11 financial years, which form basis of this study) to determine whether management reviews contributed to continual improvement.
- c) The environmental management performance (using KPIs), were compared to success (using the RAS results), and behaviour (using the questionnaire and interviews if required).

A schematic representation of the research design and methodology is illustrated in figure 2-3 below.



Figure 2-3: A schematic representation of research design and methodology

2.6 Conclusion

This chapter dealt with the research design and methodology for this study. The research process was divided into three steps: the planning stage (composing research questions and formulating the research design), the execution stage (data collection and analysis), and the publication stage (this report). This study has followed the exploratory research method, and thus the results can only be determined once analysis and interpretation have been done.

The research methodology included a literature study on various national and international articles and journals on EMSs that specifically related to environmental performance. The ISO 14001 element 4.6 requirements were extracted from the SANS 14001: 2005 report and tabulated for analysis, the databases of Eskom Distribution: Western Region – the management review presentation results for the 2008/09, 2009/10 and 2010/11 financial years, key significant environmental aspects dealt with by the TSCs and MEW, KPIs, RAS results and the results of the external EMS audit conducted from 23 to 25 April 2007 – were used for this research. Furthermore, questionnaires were sent to the TSC senior supervisors and SHEQ management. The chapter also identified methods used for data collection as well as for data analysis.

Now that the research design and methodology for this study have been illustrated, chapter 3 will give an overview of the literature reviewed for this study.

CHAPTER 3: LITERATURE REVIEW

3.1 Introduction

“The purpose of the EMS is to provide order and consistency for an organisation to address environmental concerns through the commitment to an overall environmental policy, the identification of existing and potential environmental impacts, the setting of objectives and targets, the allocation of resources and responsibilities and the continual evaluation of practices, procedures and processes (SANS14001,, 2005:v). According to Netherwood, (1996:36–37), an EMS is composed of basic principles that can be applied internationally. These principles are as follows:

- A policy statement in which a commitment to environmental improvement and natural resource conservation and protection are indicated
- A series of plans and programmes for the implementation of the policy inside and outside the organisation
- The integration of these plans and programmes with the organisational culture and into the organisation’s daily activities
- The measurement, auditing and review of policy, plans and programmes to determine the organisation’s environmental management performance
- The provision of education and training to employees on all levels within the organisation to improve their understanding of environmental issues
- The publication of information on the organisation’s environmental performance

O’Laoire and Welford (1996:204–209) argue that among other factors that ensure the successful implementation of the ISO 14001 standard, it is necessary for a company to adopt an approach of continual, gradual improvement to reach realistic goals. This is mostly done through the management reviews that are held periodically. Another important factor is to gather information about all environmental impacts (described by SANS 14001, 2005:2 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation’s environmental aspects); this information can then be used to identify appropriate steps to reduce such impacts, to assist the company with prioritising its approach and to ensure

that there will be definite benefits to the company. However, in general management review can quickly turn into a dry review of the items on the agenda, done only to show an auditor that the review was held (McDonald et al. 2003:72). In this instance, a dry review means there is no sincerity; it is only done for record, and not to review the System.

Therefore, this study has assessed the effectiveness of management reviews as an ISO 14001:2004 continual improvement element.

3.2 Literature on the implementation of an EMS in accordance with ISO 14001

Hutchinson and Hutchinson (1997:124-125) view an EMS as the major tool for implementing environmental objectives. They consider it as a valuable process for both large and smaller companies in the move towards increased sustainability. However, they also warn against the tendency to overestimate the ability of the EMS process to bring about change if there is little change in a company's values. According to them, the EMS can just become a bureaucratic paper-pushing exercise if it is not used correctly.

ISO 14001 is a voluntary standard for offering guidance on the establishment and maintenance of EMSs (SANS 14001, 2005:v). It assists companies in acquiring an EMS and controlling the implementation performance towards environmental goals. There has been an enormous need for both manufacturing and non-manufacturing sectors to embrace the EMS approach and use of cleaner production practice technologies (Pun & Hui, 2001:333; Croci, 2005:11; Ann *et al.*, 2006:87).

ISO 14001 registrations have received a commercial enhancement by individual companies and industry sectors that are looking for cost savings and marketplace leadership (Kuhre, 1995:17; Ann *et al.*, 2006:87). Other factors triggering firms to implement ISO 14001 are market demands in the export sector and pressure from the European subsidiary firms, e.g. ISO-certified firms in Zimbabwe and Japan (Nakamura et al., 2001:40; Mbohwa & Fukada, 2002:430), legal compliance, customers, non-governmental organisations, a reduction in risks, etc.

ISO 14001, as a versatile standard, may be used by organisations in three different ways: firstly as an internal best-practice guideline with or without self-declaration of performance achieved,

and secondly, to satisfy second-party requirements (such as manufacturing organisations demanding conformance to ISO 14001 requirements from their suppliers – conformance is then verified by the second party). The third option entails accredited organisations verifying conformance to ISO 14001 by means of environmental management system audits (Bansal & Bogner, 2002:271; Nel & Du Plessis, 2002:53; Boiral, 2007:129-130).

ISO 14001 certification is characterised by numerous benefits, such as a reduction of hazardous waste. ISO certification requires programmes that will reduce hazardous materials and waste. Another benefit is the conservation of natural resources – a good written environmental management programme (EMP) will assist in reducing the need for electricity, process intensification, and promote gas, water and pollution control, as well as waste minimisation (Kuhre, 1995:17; Pun & Hui, 2001:336, 343; Bansal & Bogner 2002:269; Emilsson & Hjelm, 2002:445-446; Melnyk *et al.*, 2003:332–333). In some parts of the world, resources are scarce and therefore both environmental performance and reduced costs are achieved (Bansal & Bogner 2002:273; Zutshi & Sohal, 2004a:339; Ann *et al.*, 2006:79, 87). It could also help in the mitigation of worldwide environmental problems like climate change.

Generally, the objective of ISO 14001 is to aid environmental protection and the prevention of pollution in balance with socio-economic needs (ISO 14001, 2005:4; Emilsson & Hjelm, 2002:444). Hence, it enhances the image of the organisation, saves costs and demonstrates environmental commitment to clients, public authorities, citizens and ecological groups (Rondinelli & Vastag, 2000:501; Roy & Vézina, 2001:343–344; Bansal & Bogner, 2002:273, 275; Emilsson & Hjelm, 2002:446, 448; Mbohwa & Fukada, 2002:430; Zutshi & Sohal, 2004a:341, b:380). As a result, organisations that endorse and apply ISO 14001-based management systems are valued globally for their achievements, hence it is an internationally recognised standard of practice that defines the minimum requirements for sound environmental management practices (Rondinelli & Vastag, 2000:501; Emilsson & Hjelm, 2002:443–444; Nel & Du Plessis, 2002:3; Babakri *et al.*, 2003:749; Croci, 2005:6–8; Potoski & Prakash, 2005:237–239).

As mentioned under 3.1 above, O’Laoire and Welford (1996:204–209) argue that one of the factors that ensure the successful implementation of the ISO 14001 standard is the adoption of an approach of continual, gradual improvement to reach realistic goals, and this is mostly done

through the management reviews that are held periodically. They further state that another important factor is to gather information about all environmental impacts; this information can then be used to identify appropriate steps to reduce such impacts, to assist the company with prioritising its approach and to ensure that there will be definite benefits to the company.

According to the SANS 14001, 2005 element 4.6 of the ISO 14001:2004 states that top management shall at planned intervals review their organisation's EMS to ensure its continuing suitability, adequacy and effectiveness. In this review, whereby records shall be kept, assessment of opportunities for improvement and the need for changes to the EMS including the environmental policy, objectives and targets shall be done. Various inputs are that include results of internal audits and evaluations of compliance with legal requirements and with other requirements to which the organisation subscribes, communication(s) from external interested parties, including complaints, the environmental performance of the organisation, the extent to which objectives and targets have been met, follow-up actions from previous management reviews, etc. are listed by SANS 14001, 2005:9. On this same page, SANS 14001 2005 also suggests that the outputs from management reviews shall include any decisions and actions related to possible changes to environmental policy, objectives, targets and other elements of the EMS, consistent with the commitment to continual improvement.

3.3 The role of management in effective management system deployment

In order to ensure the success of an EMS, the SANS 14001:2005 standard requires the organisation to develop an environmental policy that must be supported and committed to by top management (SANS 14001, 2005:4). This obligation extends to the need to undertake periodic management reviews, as required by element 4.6 of the standard. Furthermore, element 4.2 requires that top management must also commit to compliance, pollution prevention, continued improvement of environmental performance, the provision of resources (element 4.4.1) for the implementation and review of the EMS, and involvement by employees at all levels of the organisation (element 4.4.2). The review forms part of the EMS requirement, which is called the plan-do-check-act (PDCA) Cycle.

The steps in each successive PDCA cycle are as follows (Arveson, 2013; HCI, 2013; Mind Tools, 2013; University of North Carolina, 2012):

- Plan: Identify and analyse the problem
- Do: Develop and test a potential solution
- Check: Measure how effective the test solution was, and analyse whether it could be improved in any way
- Act: Implement the improved solution fully

In summary, the EMS (ISO 14001) PDCA cycle is as below:

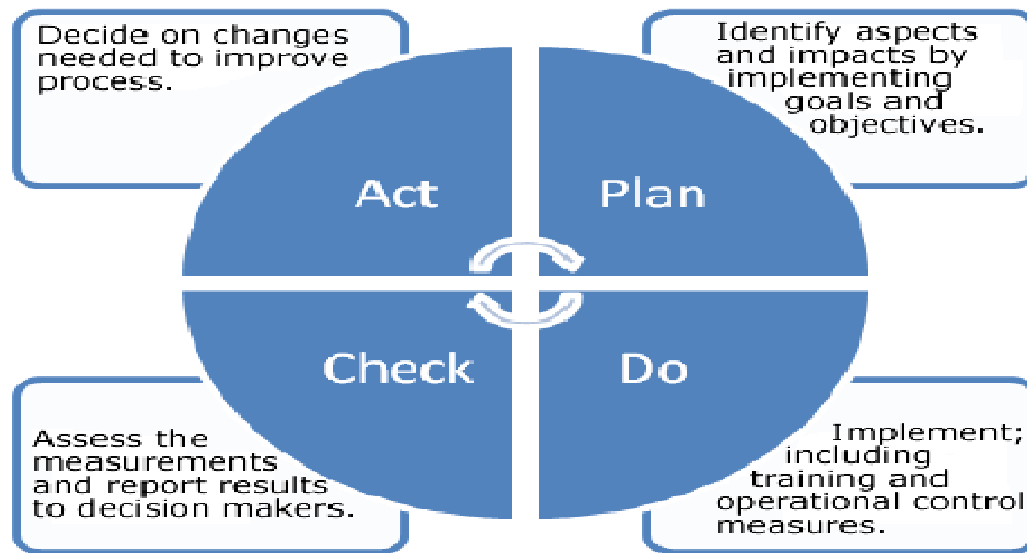


Figure 3-1: The PDCA cycle

Source: University of North Carolina, 2012

Thus, management who applies the PDCA cycle to their EMS is believed to have an EMS that brings continual improvement to their system. Positive results supporting the role of management in effective management system deployment were demonstrated in a study of the Alumax aluminium ingot production facility, called Mt Holly, South Carolina by Rondinelli and Vastag (2000:504–505), where the managers considered ISO certification as a commitment to protect the environment. Their ISO motivated staff to reduce waste and recycle at the plant – waste decreased from 3 500 tons in 1989 to 1 500 tons in 1995, and the amount of waste sent to the waste site decreased from 7 608 tons in 1995 to 4 960 tons in 1998. Furthermore, the waste cost of production per ton of aluminium dropped from \$8.33 in 1995 to \$6.50 in 1998.

3.4 Conclusion

EMS and/or ISO 14001:2004 is a voluntary standard, the aim of which is to address the environmental aspects, set targets and objectives, set KPIs and formulate an environmental management programme of the organisation's activities in order to meet legal compliance. The environmental policy is the commitment document by the top management of the organisation that adopts the EMS standard. O'Laoire and Welford (1996:204–209) argue that one of the factors that ensure the successful implementation of the ISO 14001 standard by a company is the adoption of an approach of continual, gradual improvement to reach realistic goals. This is mostly done through the management reviews that are held periodically. However, in general management review can quickly turn into a dry review of the items on the agenda, done only to show an auditor that the review was held (McDonald et al. 2003:72). Effective management reviews are believed to bring continual improvement to the EMS of the organisation. Therefore, the fourth chapter of this thesis has analysed the ISO 14001 element 4.6 requirements against the Eskom Distribution: Western Region's management review components to verify if the Region address EMS element 4.6 requirements and sampled the Technical Service Centres (TSCs) and Major and Minor Engineering Works (MEW) of Eskom Distribution: Western Region to assess the effectiveness of management reviews as an ISO 14001:2004 continual improvement element.

CHAPTER 4: ANALYSIS AND INTERPRETATION OF DATA

4.1 Introduction

Questionnaires and databases are some of the sources of information for research. During the study, all these sources were used to obtain information and test whether management reviews conducted by Eskom Distribution: Western Region have been effective as an element of ISO 14001:2004. In this chapter, EMS requirements of element 4.6 are analysed against the Eskom Distribution: Western Region's management presentations for the 2008/09, 2009/10 and 2010/11 financial years to determine if management reviews address EMS element 4.6 requirements, the questionnaires that were sent to selected TSC senior supervisors and SHEQ management representatives who were involved between 2008 and 2011 are analysed and interpreted. Management review presentations, including RAS audit results as well as the external audit results of 23–25 April 2007, were analysed and interpreted.

As stated on Chapter 1 of this study, this study has a main question that is answered through sub-questions. The main question asked 'What effect do management reviews have on the continual improvement of the implementation of the ISO 14001:2004 environmental management system standard within Eskom Distribution: Western Region?' The first sub-question to the main question asked Do management reviews conducted by the Eskom Distribution: Western Region address EMS element 4.6 requirements? The summarised response to this sub-question is illustrated on Table 4-1 below.

4.2 Research sub-question 1: Do management reviews conducted by the Eskom Distribution: Western Region address EMS element 4.6 requirements?

According to the SANS 14001, 2005 element 4.6 of the ISO 14001:2004 states that top management shall at planned intervals review their organisation's EMS to ensure its continuing suitability, adequacy and effectiveness. In this review, assessment of opportunities for improvement and the need for changes to the EMS, with the inclusion of the environmental policy and environmental objectives and targets has to be undertaken. Furthermore, records of

the management reviews shall be kept. Element 4.6 further states that input to management reviews shall include the following:

- a) results of internal audits and evaluations of compliance with legal requirements and with other requirements to which the organisation subscribes
- b) communication(s) from external interested parties including complaints
- c) the environmental performance of the organisation
- d) the extent to which objectives and targets have been met
- e) status of corrective and preventative actions
- f) follow-up actions from previous management reviews
- g) changing circumstances, including developments in legal and other requirements related to its environmental aspects
- h) recommendations for improvement

To determine the compliance with this research sub-question 1 by Eskom Distribution: Western Region, Table 4-1 below was used. In this table, it is demonstrated that all management reviews within the 2008/09 – 2010/11 financial years covered all the requirements of element 4.6. The input on the management reviews included all the requirements as per element 4.6.

Table 4-1: Element 4.6 requirements vs Eskom Distribution: Western Region management review components

Element 4.6 requirements	2008/09 financial year	2009/10 financial year	2010/11 financial year
Results of internal audits and evaluations of compliance with legal requirements and with other requirements to which the organisation subscribes	No RAS audit was conducted in this financial year.	The Region had a target of obtaining 94% on the RAS internal audit, their actual score was 98%.	The Region had a target of obtaining 94% on the RAS internal audit, their actual score was 98%.
	Compliance with legal requirements & with other requirements to which the region	2 legal contraventions were registered against the Region.	1 legal contravention was registered against the Region.

	subscribes to was dealt with. There were no legal findings except minor findings on the polychlorinated biphenyl (PCB) register.		
Communication(s) from external interested parties including complaint	Complaints/queries were received via the contact centre.	Complaints/queries were received via the contact centre.	Complaints/queries were received via the contact centre.
		The Region signed a Memorandum of Understanding (MOU) with Cape Nature for all sites managed by Cape Nature.	Intervention with the South African Heritage Resources Agency (SAHRA) and Heritage Western Cape (HWC).
			Intervention with the City of Cape Town Water Demand Division.
The environmental performance of the organisation	The Region had no legal contravention affecting the Operation Health Dashboard (OHD). Refer to figure 4-1 for performance.	The Region had no legal contravention affecting the OHD. Refer to figure 4-2 for performance.	The Region had no legal contravention affecting the OHD. However, there was one (1) major oil spill that was reported to the Department of Water Affairs (DWA). Refer to figure 4-3 for

			performance.
The extent to which objectives and targets have been met	The objectives and targets were met.	The objectives and targets were met.	The objectives and targets were met.
Status of corrective and preventative actions	The Dagbreek non-conformance report (NCR) with regard to the environmental management plan/programme (EMP) condition was investigated and completed, meaning lessons learnt, corrective and preventive actions were done.	On the Montagu-Barrydale Phase 1 incident regarding the collection of stone artefacts prior to construction, an Archaeologist was appointed to conduct an on-site investigation to assess the extent of the damage and to recommend mitigation. No mitigation was required. The actions put in place were deemed sufficient by Heritage Western Cape and no follow-up action was recommended by the authorities. Lessons learnt were also circulated to all employees including contractors.	On the contravention of the provision of the National Forest Act (Act 84 of 1998): cutting protected tree without permit by the contractor, recommendations were made to the contractor (e.g training in tree identification) to mitigate risk and prevent re-occurrence. An awareness campaign regarding vegetation management was initiated in the Region with all contractors and field services. Lessons learnt were also circulated to all employees including contractors.

		<p>On the Montagu-Barrydale Phase 2 incident regarding the notification of the land-owners within 100m from the development, a new Basic Assessment was conducted and all land-owners within 100m from the development were notified. Lessons learnt were also circulated to all employees.</p>	
<p>Follow-up actions from previous management reviews</p>	<p>The previous follow-up actions were to do with oil spills, waste management, environment days celebrations, appointment letter of the Environmental Control Officer (ECO) and review of the EMP with MEW and Project Management to verify applicability on site. All these actions were closed.</p>	<p>The previous follow-up actions were to do with project permit/EMP compliance, legal compliance, wildlife, waste; Environmental aspects, legal requirements, KPIs, plans; Resources, and responsibilities; Training and awareness; and communication which all tied up with the 2008/09 management reviews</p>	<p>The previous follow-up actions were to do with management support including visibility on environment; EMS resources that needed to be increased; project risks; operational aspects; waste management, climate change awareness; and implementation of the audit findings which all tied up with the 2009/10</p>

		recommendations.	management reviews recommendations.
Changing circumstances, including developments in legal and other requirements related to its environmental aspects	The Environmental Impact Assessment Draft Regulations were published on 13 February 2009 for public comment; and the amendment of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) that was published on 10 March 2009 were both covered in the management review.	The Environmental Impact Assessment Regulations that were due to be published as well the Waste Act amendment were both covered in the management review.	The Environmental Impact Assessment Regulations effective as of September 2010; Waste Act; Heritage Resources Act; 2010 National Forest Act Regulations that published a list of Champion Trees and a list of Protected Trees; Green Scorpions that audited on the Region's construction site; and Eskom wide restructuring that were to affect the legal and other requirements of the Region were all covered in the management review.
Recommendations for improvement	The recommendations for this management review were on project EMP/permit compliance; legal	The recommendations for this management review were on Management support including visibility on	The recommendations for this management review were on the update of the environmental

	<p>compliance; wildlife interaction; waste; Environmental aspects, legal requirements, KPIs, plans; resources, and responsibilities; Training and awareness; and communication.</p>	<p>environment; EMS resources that needed to be increased; project risks; operational aspects; waste management, climate change awareness; and implementation of the audit findings.</p>	<p>management system (EMS) manual; communication and visibility of the new Safety, Health, Environment and Quality (SHEQ) Policy; review and update of all aspect registers; legal and other requirements to be linked to the IMBEWU website; improve and ensure mitigation on objectives, targets and KPIs; increase EMS resources; etc.</p>
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4.3 Research sub-question 3: To what extent is SHEQ management involvement and leadership drive evident in terms of management reviews and within the TSCs and MEW?

This research sub-question verified the extent SHEQ management involvement and leadership drive evident in terms of management involvement and leadership drive in terms of management reviews and within the TSCs and MEW. This has been done through the analysis the questionnaires responses that were returned by the SHEQ management and TSCs Senior Supervisors. A summarised version of the sub-question 3 is shown on Tables 4-2 and 4-3 below.

4.3.1 Discussion on results of interviews and questionnaires

No interviews took place, as some people in my target group who did not send my questionnaires back were not available for interviews either. Several requests in the form of emails were sent to them (please refer to annexure 2 for proof). Phone calls were also made, but appointments could not be secured.

4.3.1.1 Management questionnaires

Out of 22 questionnaires sent out via e-mail to SHEQ management, only six were returned, giving a 37% response rate. Of the six, one had 'not applicable' as a response to most questions, hence this participant claims to not have attended the management review meeting. Below is the analysis and interpretation of the SHEQ management questionnaires. A full list of questions, responses and interpretations is added as annexure 4 to the report.

When SHEQ managers were asked whether they had participated in management review/s before, both M1 and M13 claimed that they had not participated in the EMS management reviews, while M18 and M19 had participated. However, M16 and M22 did not answer the question. In a follow-up question as to the financial years in which they participated, both M1 and M13 claimed not to have participated in the EMS management reviews, and as such the response to this question is not applicable. However, as much as both M18 and M19 responded with a positive answer on question 1, only M19 indicated the number of years she or he participated in the EMS management reviews. M18 did not answer the question. On the other hand, M16 and M22 did not respond to question 1, but on the follow-up question on question 1

they both mentioned that they have been attending EMS management reviews since 2009. When they were asked about what they expected from the outcome of a management review, the response of M13 was once again not applicable, hence she or he had not attended any EMS management reviews. Interestingly, although M1 had also not attended any EMS management reviews, she or he gave her or his expectation of the outcome of management reviews, and her or his expectation is that management reviews must consider effectiveness of Eskom Distribution: Western Region's EMS and make recommendations where required.

Both M16 and M22 expect the Eskom Distribution: Western Region's EMS management reviews to bring about continual improvement in programmes and current practices. M22 further states that the EMS management reviews should also empower the employees, specifically those involved with the execution of the projects (for example, those involved with construction). It must be noted that construction has been identified as the major contributor of environmental impact within Eskom Distribution. It is interesting to note that some participants of this study are familiar with the connection between the EMS management reviews and activities of the organisation, whereby continual improvement must be seen, particularly effectiveness of the EMS to be reviewed, improvement in current practices, matters that require actions to be addressed, risks to be elevated and empowerment of the construction team to minimise negative environmental impacts. Interestingly, all these expectations relate to the PDCA cycle, which has been adopted by the ISO 14001 Standard. This shows that although the participants did not spell out the PDCA cycle, they are aware that the EMS management review is part of the cycle.

On the other hand, M18 expects feedback from the EMS management review. Thus, decisions should not stay with SHEQ management, but must be cascaded down to the relevant employees who are directly involved with execution. This is also an interesting response, as it seems that the employees who do the execution do not attend EMS management reviews.

In the questionnaire when SHEQ managers were asked whether they knew if the management reviews' recommendations were implemented, both M1 and M13 stated that they had not attended any EMS management reviews, and as such, their response for this question was that they do not know if the management reviews' recommendations were implemented. Feedback on the management reviews is vital, as depicted by M18 on question 3 above. M16 did not answer this question. It is difficult to determine if it was left out on purpose or omitted by

mistake, as she or he has been attending the management reviews since 2009. However, M18, 19 and 22 gave a positive response to this question. One may wonder how M18, 19 and 22 know whether management reviews' recommendations are implemented. The response to this question is found in the answers given by them on questions 5, 14 and 16 where they all agree that management reviews address significant aspects (an aspect is defined as the element of an organization activities or products or services than can interact with the environment, SANS 2005:2) and improvement is already visible due to laws which are imposed on Eskom. There is better work management and improved contractor management, good performance against the targets, and improvement due to tight monitoring and clear requirements being in place. Trend analysis can be established and incidents are fully investigated. The exception is M22 on question 5, who did not answer the question.

In a follow-up question, both M1 and M16's responses were that management reviews' recommendations were tracked. These responses further point to the PDCA Cycle, specifically 'check'. M19 viewed recommendations of the management reviews through the feedback provided by the senior environmental advisor during the SHEQ meetings. SHEQ meetings are mostly done every month, which also support the response of M1 and M16 above. M18 stated that processes were put in place to make sure that management review recommendations are implemented, and one will assume that one of the processes is the monthly SHEQ meetings. M22 did not respond here and it is not easy to determine the reason.

When they were enquired whether they were aware of any measures in place to make sure that such recommendations are implemented within reasonable time frames, M1 and M16 gave the same responses as on question 5. For question 5, M18 mentioned that processes were being put in place to check whether management review recommendations are implemented. On question 6, M18 elaborated on her or his response on question 5 and said that one of the processes put in place are the KPIs per recommendation. Thus, management review recommendations are not only implemented through the monthly SHEQ meetings, but also KPIs that are attached to each recommendation. M19's response could also relate to M1 and M16 as she/he states that the measures that are in place are in the form of deadlines and time frames that are agreed on upfront. M22 states that measures that are in place to make sure that such recommendations are implemented within reasonable time frames are through feedback reports to the relevant stakeholders (Risk Management). It is important to note that risk management

forms part of the SHEQ Committee as well as the EMS Management Review Committee. Therefore, their representation in such forums helps to become part of the solution(s).

When they were enquired what, in their opinion, the aim of management reviews is, it was with the aim of determining whether the same response as for question 3 would be given, as it was the same question but asked differently. Interestingly, the responses given on this question are more or less the same as the responses given on question 3. This proved that there was consistency in the responses given by the participants, and that they mostly applied their minds and understood the meaning of each question. On a follow-up question, asking if the aim brings about results, only M1 and M19 responded positively, with M18 indicating that she or he did not know. The other three did not respond at all. However, it must be noted that M13 stated on the first question that she or he has not attended any EMS management reviews before. It might be that the aim of question 7 does not seem to be fully met. However, it is believed that the few participants gave a thorough reflection of the management reviews of Eskom Distribution: Western Region.

Although question 8 did not receive a positive response, the question that required them to specify results proved the opposite. It seems as if management reviews deliver results. Not counting M13, four results were obtained, with the exception of M18 who did not respond and M22 who stated that the results are normally observed over time (which is true, as some results can only be observed after a long time). M1, 16 and 22 all observed an improvement (continual improvement as per the ISO 14001 requirement). The improvement was in the form of processes, gap analysis, increased environmental awareness, risks that are addressed and programmes agreed upon. One will assume that the programmes are agreed upon to make sure that whatever shortfalls have been identified are closed on time. The closing of shortfalls/incidents support the PDCA cycle, specifically the 'act' part of it.

When they were asked whether they were of the opinion that it was important for a company or division to be ISO 14001:2004-certified, M1, 19 and 22 viewed the importance of a company being ISO 14001-certified as the fact that it brings improvement in the company's processes, improved quality, operation (the way of doing things), and the assurance that risks are treated, performance improves as a result. Continual improvement, which is one of the ISO 14001 elements, was also noted here by these participants. Both M1 and M18 viewed ISO 14001 certification as the adoption or application of international standards in the company's activities,

which also relate to quality improvement. M16 and M18 also aligned ISO 14001 certification with international standards. M16 further stated that the certification assisted an organisation in achieving compliance to legislation and ensuring the commitment of management and employees, as the company makes its employees aware of its objectives.

On a question how the inclusion of EMS elements was decided upon, M1 and M19 indicated that they believed that EMS elements were decided by the SHEQ Committee, while M16 was unsure. M18 did not really answer the question as expected, but noted that the environment was intertwined with the company's operations and as a result was important. M22 believed that EMS elements were determined by the legislation requirements as well as the business activities. Business activities determine the environmental aspects and impacts of the the organisation.

On a question what they consider to be the key significant aspects of Minor and Major Engineering Works (MEW) and TSCs, M1, 19 and 22 indicated that some key significant aspects within Minor Engineering Works were awareness and training. It seems that, in their understanding, these are the requirements for Minor Engineering Works. However, M16's views were that vegetation management, oil spills and waste affected Minor Engineering Works at that time. M18 believed the key aspects were the digging of holes (for the structure foundations) and trimming of trees. M19 viewed compliance to environmental legislation as a significant aspect. Without compliance to environmental legislation, the KPIs would drop and the continual improvement through EMS management review would possibly be meaningless. M22 further noted the need for training in terms of EMS and cultural changes, and that communication had to be improved. However, cultural changes have various meanings. In this case, it might mean a culture of wanting to learn even if it is something you think is not in your field, as ISO 14001 is generally viewed as a protocol to be implemented by environmental practitioners. Training on the EMS and improved communication will assist in changing this thought culture. The responses for Major Engineering Works are similar to the Minor Engineering Works in the sense that both departments do more or less the same work with a difference in the size of the kilovolts. However, M1 additionally thought that environmental management programmes (EMPs), people and environmental impact assessments (EIAs) should be in place. The responses for the TSCs are also similar to those for the Minor Engineering Works. Some of the work done by the TSCs is similar to that done by Minor Engineering Works. The only difference

is that the TSCs own the assets, while Minor Engineering does not (it operates like a contractor).

On a question whether management reviews addressed major significant aspects, four out of six participants responded with a 'yes', M19 did not know, while M13 claimed to have never participated in the management reviews. With this positive response (although the study received a low response rate on the questionnaires), it was assumed that management reviews indeed address major significant aspects within Eskom Distribution: Western Region. However, for the purpose of the study it does provide an indication that has statistical relevance, as it was done for a small group of people (Dawson, 2009:48). Participants believed management reviews addressed major significant aspects, such as changing employees' behaviour (the way of doing things/work), bridging the gaps relating to environmental aspects, continual improvement of programmes and other areas, regular audits (as compared to the past) and identifying new risks.

For Minor and Major Engineering Works, participants believed management reviews addressed major significant aspects in the form of change of the employees' behaviour, bridging the gaps relating to environmental aspects, continual improvement of programmes and other areas, regular audits (as compared to the past) and identifying new risks. Similar responses to those of the Minor/Major Engineering Works were given, except by M22, where she or he referred to staff training. Staff training is vital, as it can empower the employees to contribute to the effectiveness of the management reviews and ISO 14001 continual improvement within Eskom Distribution: Western Region.

When SHEQ management was asked whether management reviews might not address major significant aspects, no response was received. This could be because participants believed management reviews addressed major significant aspects within the region. When SHEQ managers were asked whether they have seen an improvement or a decline in environmental performance within the region and why, all the participants who responded to this question indicated that they had seen an improvement in environmental performance within Eskom Distribution: Western Region. Improvements were observed in terms of awareness and reporting, a reduction in legal contraventions, participation in environmental interventions (for example a recycling programme that coincided with the reduce and recycle initiative and ISO 14001 objectives to reduce waste), work being managed better, improved contractor

management (distribution powerlines and substations are mostly constructed by contractors), good performance against targets, strict monitoring and audits, requirements communicated clearly to those affected and incidents being fully investigated. With such a positive response on this question and questions 7, 9, 13 and 14 (although the response rate was low), one can state that management reviews within Eskom Distribution: Western Region are effective and do bring about continual improvement.

Table 4-2: The effect management reviews have towards the continual improvement of the implementation of the ISO 14001:2004 in terms of SHEQ management

Research sub-questions	Yes/No/Extent	Comments	Evidence
1. Do management reviews conducted by the Eskom Distribution: Western Region address EMS element 4.6 requirements?	Yes	All requirements of element 4.6 have been covered in all management review presentations conducted between the 2008/09 and 2010/11 financial years.	There were no findings from the ISO 14001 external audit on element 4.6.
2. Do management reviews identify key significant environmental aspects adequately?	Yes	All key significant environmental aspects have been adequately identified.	Four out of six participants (SHEQ management) responded with a 'yes', M19 did not know, while M13 claimed to have never participated in the management reviews. Some participants in this study have also identified the key significant aspects in both TSCs and MEW. The ISO 14001 external audit concluded that key environmental

Research sub-questions	Yes/No/Extent	Comments	Evidence
			aspects had been identified and documented.
3. To what extent is Safety, Health, Environment and Quality (SHEQ) management's involvement and leadership drive evident in terms of management reviews and within the TSCs and MEW?	Reasonable extent.	Positive response from the questionnaire participants.	TSCs participants responded positively to this question, except TSC 10, who was not sure. According to their view, full top management support of EMS was demonstrated in the form of SHEQ policy, environmental training of TSC staff, communication through various media channels like magazines, public statements in newspapers and on television, various policies and procedures put in place and compliance ensured, and investing in hiring more environmentally informed personnel to ensure that every environmental incident is investigated, recommendations are applied and the findings are

Research sub-questions	Yes/No/Extent	Comments	Evidence
			<p>looked at. Furthermore, funding was provided by top management to address environmental issues, and there was top management commitment to the EMS and pressure on the TSCs to comply. Top management made sure that solutions were found for audit findings.</p> <p>The level of management commitment was found to be commendable by the ISO 14001 external audit.</p>
<p>4. To what extent do management reviews contribute to the continual improvement of the implementation of the ISO 14001:2004 environmental management system</p>	<p>Reasonable extent.</p>	<p>Positive response from the questionnaire participants.</p>	<p>All the SHEQ management participants who responded to this question have seen an improvement in the environmental performance of Eskom Distribution: Western Region. The improvements include awareness and reporting, a reduction in legal contraventions, participation in</p>

Research sub-questions	Yes/No/Extent	Comments	Evidence
standard within Eskom Distribution: Western Region?			<p>environmental interventions (for example, the recycling programme that coincides with the reduce and recycle initiative and ISO 14001 objectives to reduce waste), better management of work, improved contractor management (distribution powerlines and substations are mostly constructed by contractors), good performance against targets, strict monitoring and audits, requirements being communicated clearly to those affected and incidents being fully investigated.</p> <p>All the TSC participants have seen an improvement in environmental performance due to annual management reviews, except TSC11, who had not seen</p>

Research questions	sub- Yes/No/Extent	Comments	Evidence
			<p>the management review results. TSC10 further stated that environmental practitioners had become much more visible in the TSCs/CNCs. On a follow-up of this question, it was observed that seemingly, awareness and compliance increased in the TSCs, as it was supported in the responses to this question by TSC 14 and 17 in particular. Environmental incidents declined, as observed by TSC 2 and 3. TSC 2 further stated that incidents had not only decreased in her or his TSC, but also in the surrounding TSCs. She or he further gave an exception to the legal contraventions, stating that they had not occurred for a number of years. TSC 9 based her or his positive response on</p>

Research questions	sub- Yes/No/Extent	Comments	Evidence
			<p>the fact that there had been no findings on the audits conducted in her or his TSC. TSC 10 and 15 had gone as far as implementing standards and procedures with their staff in order to comply, and therefore avoided legal contraventions and possible environmental incidents, as observed by TSC 2. TSC 17 stated that the TSC staff applied bird flappers where birds got electrocuted or collided with the powerline(s). This was done to prevent future collisions and electrocutions.</p>

4.3.1.2 TSC senior supervisors' questionnaires

Out of 18 questionnaires sent out via e-mail to the TSC senior supervisors, only eight were returned, giving a 44% response rate. Below are questions and responses from the TSC senior supervisors, as well as the analysis and interpretation of these. A full list of questions, responses and interpretation will be added as annexure 5 to the report.

In terms of the role the TSC senior supervisors play, all the participants are responsible for implementing Eskom's environmental policies, standards and procedures, and making sure that they clean up whatever impact they have had on the environment and ensuring the protection of the environment, which is linked to compliance with the relevant legislation. TSC 9 further stated that she or he was responsible for reporting on safety, health and environmental matters to various stakeholders. Thus, reporting did not end in her or his TSC, but it should also continue to other stakeholders who would possibly take further action in order to mitigate environmental impacts and risks. TSC 11 and 14 stated that they made sure that ISO 14001 requirements were also made known among the staff members of their TSCs. TSC 14 further ensured that environmental responsibilities were communicated, assigned and monitored, and ensured that KPIs were met. It must be noted that meeting KPIs is one of the measurements that would determine whether the Eskom Distribution: Western Region's management review is effective and brings about continual improvement.

When the TSC senior supervisors were asked whether their FSC managers had participated in the EMS management reviews, TSC 2, 10, 11, 15 and 17 indicated that their FSC managers had done so. TSC 3 did not know, TSC 14 claimed that her or his FSC manager had not participated, and TSC 9 did not give a straight answer, saying she or he believed her or his FSC Manager participated in the EMS management reviews. It is interesting to note that TSC 9 believed her FSC manager had participated in the EMS management reviews, meaning that she or he expected her or his manager to attend such management reviews.

When the TSC senior supervisors were asked what they expected from the outcome of management reviews, TSC 2, 9 and 17 replied that management reviews should assist them in making sure that they comply with the relevant legislation. It must be noted that ISO 14001 implementation assists in compliance with the relevant legislation, for example avoiding and/or mitigating pollution. TSC 3's expectation was that the management reviews had to improve the

EMS. This is interesting, as one of the management review's objectives is to bring continual improvement to the EMS. Therefore, TSC 3's expectation ties up with the EMS continual improvement requirement. TSC 10, 14 and 15 expected that management reviews should guide the implementation of changes, developments and recommendations. This is also interesting, as it ties up with one of the management reviews' requirements, namely improving what is working and removing what is not working for the system. TSC 11 and 15 further stated that recommendations should be implemented to prevent recurring incidents, and preventative measures should be implemented to prevent any environmental damage. The "check" and "act" principles of the PDCA cycle were being noted here by TSC 11 and 15. TSC 11 specifically expected the management review to not only provide guidance on non-conformance to ISO 14001, but to come up with disciplinary measures that would ensure "zero tolerance" on violating the ISO 14001 standards. It is interesting to note that "zero environmental harm" is one of Eskom's "Life-saving Rules", formerly known as "Cardinal Rules". TSC 17 also applied the "act" principle, as she or he stated that one had to stay on the right track.

When they were asked whether the management review recommendations had been implemented, five of the participants (namely TSC 2, 9, 10, 14 and 17) responded positively. TSC 3, 11 and 15 did not know whether the management review recommendations had been implemented. It is interesting to note the trend displayed by TSC 3, as she or he did not know whether her or his FSC manager participated in the EMS management reviews. Supposedly, there was no feedback regarding management review(s) by her or his FSC manager.

On the follow-up to this question, TSC 11 suggested that "environmental care" should be given the same priority as human and equipment care, although she or he did not know whether the management review recommendations had been implemented. TSC 9, 14 and 17 stated that the environmental practitioners and/or environmental manager played a vital role in making sure that the management review recommendations were implemented. However, TSC 9 had personally implemented feedback from the environmental practitioner. TSC 3 and 15 did not respond, presumably because they did not know whether the management review recommendations had been implemented. TSC 10 stated that she or he was aware of the recommendations through the road shows and bulletins distributed to them. TSC 2, on the other hand, stated that senior management got involved when environmental incidents occurred, as the incident recommendations that had to be implemented and a register of sharing the incident were sent to senior management. Thus, senior management wants proof and surety that the

environmental incidents are communicated among the TSCs/CNCs to prevent re-occurrence where possible, which could also lead to the continual improvement of the EMS.

When they were asked about measures that were in place to make sure that such recommendations were implemented within reasonable time frames, TSC 3, 11 and 15 indicated that they were aware of such measures, but they did not know whether the management review recommendations were implemented. TSC 3 believed regular audits were a measure, while TSC 11 believed that the RAS should be amended to ensure that the recommendations are implemented and TSC 15 claimed that they received communication to implement the findings after a management review or audit had taken place and that they had to report their implementation progress weekly. It is clear from the responses (TSC 2, 3, 9, 11 and 14) to this question that the measure is seen as the audits. TSC 9 further stated that they were checked and that follow-ups were done by the environmental practitioners. TSC 10 added that their environmental files and training needs were also updated, while TSC 17 believed that the measures in place were the wildlife interactions and KPIs, as one would be able to measure continually if improvement had taken place, based on the KPIs' being achieved.

In response to the question of what they thought the aim of management review was, the majority of the respondents indicated that it was to ensure staff compliance with the legislation, as reflected in the responses of TSC 9, 10, 14 and 17. TSC 2, however, believed that the aim of management review was to sensitise them to look after the environment and to make sure that the future generation can also enjoy it. TSC 2's response supported sustainable development by "Brundtland" (United Nations World Commission on Environment and Development, 1987). TSC 9 viewed the aim of management reviews as not merely ensuring compliance, but also implementing improvements, which on its own ties up with the continual improvement of the EMS, while TSC 10 believed that the aim was to ascertain whether the organisation was still in line with the new NEMA Amendment Act. TSC 11, on the other hand, believed that the aim of the management review was to implement effective ways of managing, maintaining and applying ISO 14001, while TSC 15 believed that it was to prevent any damage to the environment, people and the equipment, where possible. TSC 15's response is more like the triple bottom line that involves the environment, people and the economy (equipment).

When they were asked whether the aim of the management review brought about results, all the respondents agreed that it did indeed, with the exception of TSC 3, whose response was not

applicable, and TSC 11, who did not know at the time. It must be noted that TSC 11 stated that she or he did not know the answer to question 4 (whether the management review recommendations had been implemented). When they were asked what the results were, TSC11 gave the results, stating that the results could be monitored for progress, even though she or he did not know whether the management review was effective. TSC 2, 9, 10 and 15 believed that their region (Eskom Distribution: Western Region) was compliant with the legislation. TSC 15 further stated that the results were seen through the non-occurrence of major incidents and the occurrence of a few minor incidents due to preventative steps that are enforced by way of the management review recommendations and aims. The non-occurrence of major incidents and occurrence of a few minor incidents are supported by TSC 2 and 14. TSC 2 stated that the number of incidents had been reduced and that staff knew exactly what steps to follow when an incident occurred. TSC 14 indicated that they did not have findings or repeats on their audits. TSC 17 stated that through management review aims and recommendations that were communicated to them, staff knew what Eskom's focus was, and they knew what to do. TSC 11 indicated that over time, the results could be monitored for progress.

When they were asked what they considered as the key significant aspects within TSCs and MEW, various aspects were identified. The following aspects were identified under Minor Engineering Works: driving, noise, environmental conditions like heat/cold/weather, protected areas and nature reserves, venomous bites, soil erosion, nest removal, oil spillage, veld fires, sewerage disposal, litter and waste, energy, water, asbestos, maintenance of the site where minor works take place, the fact that zero harm to the environment needs to be a culture internalised by the Minor Engineering Works personnel, inspections of all equipment and powerlines, as well as operating and building. TSC 2, 3, 10, 14 and 17 did not respond under this section, probably because they worked at the TSCs.

When asked whether management reviews addressed findings of internal and external audits within Minor and Major Engineering Works (MEW) and/or TSCs, all the respondents provided positive answers, except for TSC 3, who did not know. The positive response to this question is interesting, as question 8 had to do with whether management review aims bring about results. Only TSC 11 stated that she or he did not know whether the management review aims brought about results. However, on this question (question 11) she or he indicated that she or he thought that management reviews addressed the findings of internal and external audits within Minor and Major Engineering Works (MEW) and/or TSCs.

On a follow-up question, TSC 9 indicated that she or he believed management reviews addressed findings of internal and external audits within Minor Engineering Works, as she or he stated that from a management point of view, management reviews ensured that measures based on findings and recommendations from audits and investigations were checked, verified and put in place. TSC 2, 11 and 15 believed that management reviews addressed the findings of internal and external audits within TSCs. Lessons learned from incidents were shared across the business to prevent similar incidents from occurring. TSC15 claimed that information-sharing allowed them to rectify possible deviations at their sites/TSCs, which is connected with the continual improvement element of the EMS. On the other hand, TSC 14 claimed that management reviews ensured that there were no audit findings within TSCs. TSC 17 indicated that management reviews alerted them to problems that had to be fixed and that her or his TSC endeavoured to be the best.

When the TSC senior supervisors were asked whether they thought top management was fully supportive of the EMS, all the participants responded positively, except TSC 10, who was not sure. She or he felt that the TSCs should be ready for audits at all times and could not be expected to implement standards, policies and procedures at the last moment. She or he presumed attending seminars would assist them. On a positive note, top management's full support of the EMS is demonstrated in the form of SHEQ policy, the environmental training of TSC staff; communication in various media channels like magazines, public statements in newspapers and television, various policies and procedures being put in place and compliance being ensured, and investing in hiring more environmentally informed personnel to ensure that every environmental incident is investigated, recommendations are applied and the findings are looked at. Furthermore, funding is provided by top management to address environmental issues, top management is committed to the EMS and it places pressure on the TSCs to comply, and top management ensures that they find solutions for audit findings. However, TSC 11 felt that top management needed to be more visible on site to ensure and motivate staff to take care of the environment.

When asked whether they had seen an improvement or a decline in environmental performance in the TSC and/or MEW due to annual management reviews, all the participants indicated that they had seen an improvement, except for TSC 11, who had not seen the management review results. TSC 10 further stated that environmental practitioners have become much more visible

in the TSCs/CNCs, but she or he would like the environmental practitioners to form part of their production plan meetings. On a follow-up of this question, it was observed that seemingly, there was more awareness and compliance in the TSCs, as supported by the responses for this question, specifically by TSC 14 and 17. Environmental incidents had declined, as observed by TSC 2 and 3. TSC 2 further stated that incidents had also decreased not only in her or his TSC, but also in the surrounding TSCs. She or he further indicated that legal contraventions had not occurred for a number of years. TSC 9 based her or his positive response on the fact that there were no findings on the audits conducted in her or his TSC. TSC 10 and 15 had gone as far as implementing standards and procedures with their staff in order to comply and therefore avoid legal contraventions and possible environmental incidents, as observed by TSC 2. TSC 17 stated that the TSC staff applied bird flappers where birds were electrocuted or collided with the powerline(s). This was done so as to prevent future collisions and electrocutions.

Table 4-3: The effect management reviews had on the continual improvement of the implementation of the ISO 14001:2004 in terms of TSC senior supervisors

Research sub-questions	Yes/No/Extent	Comments	Evidence
1. Do management reviews conducted by Eskom Distribution: Western Region address EMS element 4.6 requirements?	<ul style="list-style-type: none"> • Yes. 	<ul style="list-style-type: none"> • All the requirements of element 4.6 have been covered in all management review presentations conducted between the 2008/09 and 2010/11 financial years. 	<ul style="list-style-type: none"> • Refer to table 4-1 above.
2. Do management reviews identify key significant environmental aspects adequately?	<ul style="list-style-type: none"> • Yes. 	<ul style="list-style-type: none"> • All key significant environmental aspects have been adequately identified. 	<ul style="list-style-type: none"> • Various key significant environmental aspects were identified by the TSC Senior Supervisors. <p>The ISO 14001 external audit concluded that key environmental aspects had been identified and documented.</p>
3. To what extent is Safety, Health, Environment and	<ul style="list-style-type: none"> • Reasonable extent. 	<ul style="list-style-type: none"> • Positive response from the questionnaire participants. 	<ul style="list-style-type: none"> • Refer to table 4-1 above.

Research sub-questions	Yes/No/Extent	Comments	Evidence
Quality (SHEQ) management involvement and leadership drive evident in terms of management review and within the TSCs and MEW?			
4. To what extent do management reviews contribute to the continual improvement of the implementation of the ISO14001:2004 environmental management system standard within Eskom Distribution: Western Region?	<ul style="list-style-type: none"> Reasonable extent. 	<ul style="list-style-type: none"> Positive responses from the questionnaire participants. 	<ul style="list-style-type: none"> Refer to table 4-1 above.

4.4 Research sub-question 2: Do management reviews identify key significant environmental aspects adequately?

4.4.1 Research sub-question 2a

Assess management review presentations results from 2008/9-2010/11 and compare that against the key significant environmental aspects and look at its effectiveness and implementation in the TSCs and MEW. Effectiveness will be based on the rich statements from the questionnaires.

The management review presentations were assessed through Distribution Division Environmental Index on Figures 4-1, 4-2 and 4-3, KPI performance on Tables 4-4, 4-4, 4-6 and 4-7 (comparison of KPI performance from 2008/9-2010/11 financial years was also done on Table 4-7), specifically focusing on the Western Region, management review recommendations and outcomes between 2008/9-2010/11 financial years on Tables 4-8, 4-9 and 4-10.

4.4.2 Discussion of results from databases

The databases that were used for this research were the management review presentation results for the 2008/09, 2009/10 and 2010/11 financial years, key significant environmental aspects for the TSCs and MEW, KPIs, RAS results and results of the external EMS audit conducted from 23 to 25 April 2007 (no external ISO 14001:2004 audits were conducted between the 2008/11 financial years). The management review presentation results were compared against the key significant environmental aspects of the TSCs and MEW to verify their effectiveness and implementation in the TSCs and MEW. The main reason for using these databases is because they are the source for determining whether management reviews conducted by Eskom Distribution: Western Region have made a positive difference as one of the ISO 14001:2004 elements. As explained in Chapter 2, MEW and TSCs within the Eskom Distribution Division are the departments that have direct impacts on the environment, as both are involved with construction and maintenance and/or the refurbishment and strengthening of the distribution powerlines and substations.

4.4.2.1 2008/09 management review presentation

The 2008/09 financial year management review presentation outcome revealed that there was one legal contravention. This legal contravention constituted compliance to details in the EMP of the Blanco-Kleinbrak-Groot Brak-Mossel Bay powerline project.

4.4.2.2 TSCs' key significant environmental aspects

The key environmental aspects for the TSCs were more or less the same across Eskom Distribution: Western Region. The difference lay mainly in the location of the TSCs. At the time of the inception of the proposal for this dissertation, Eskom Distribution: Western Region covered the entire Western Cape and included parts of the Northern Cape as well as parts of the Eastern Cape (Plettenberg Bay) – refer to the map in Annexure 3. The TSCs' key environmental aspects for that financial year were as follows:

- a) Vegetation management (driving, trampling and vegetation removal)
- b) Cutting of protected trees and clearing of protected vegetation
- c) Legal compliance
- d) Oil spill management
- e) Wildlife incident management
- f) Fire management
- g) Soil erosion management
- h) Land management issues
- i) Customer complaints

4.4.2.3 MEW's key significant environmental aspects

The MEW's key environmental aspects for this financial year were as follows:

- a) Vegetation management (driving, trampling and vegetation removal)
- b) Cutting of protected trees and clearing of protected vegetation
- c) Oil spill management
- d) Soil erosion management
- e) Top soil removal

- g) Veld fires
- h) Customer complaints

One of the TSCs' key environmental aspects for that financial year was legal contravention. The target was one legal contravention and the actual incident was one legal contravention. As much as it is ideal not to have a legal contravention at all, it is, however, comfortable to have one legal contravention, taking into account the nature of the business of Eskom Distribution: Western Region. Furthermore, this legal contravention was closed within a reasonable time frame. This legal contravention did not occur twice within the same financial year, neither did it affect the Occupational Health Dashboard (OHD), which would have meant that the entire region would be penalised for it on its financial year performance.

In summary, Eskom Distribution: Western Region performed effectively during that financial year, and on its index it scored 100% for registered contractors for environmental training, 91.67% on wildlife incidents closed within less than four months, 100% on oil spill incidents remediated within two months, 96% on environmental service delivery (a score measured through closed and open environmental incidents) and 70.12% on training the CCU-MMM staff on environmental legislation. Refer to figure 4-1 below for the 2008/09 environmental index. Eskom Distribution: Western Region is represented by "W".

DISTRIBUTION DIVISION ENVIRONMENTAL INDEX: 2008/9

Month: March 2009

Key Performance Indicator	Measure	Weight (%)	Target setting values								Regional Performance										Weighted Divisional Score						
			% of Target for "Floor" Score:							60																	
			% of Target for "Ceiling" Score:							110																	
			Floor Value	Target Value						Ceiling Value	Actual Values						Weighted Score										
	W	S	NW	E	C	N	W	S	NW		E	C	N	W	S	NW	E	C	N								
1. Legal Contraventions affecting the OHD	Nr	25	0.6	0	0	0	0	0	0	0	0.00														27.50	27.50	
2. Repeat legal contraventions	Nr	0	0.6	0	0	0	0	0	0	0	0.00															0.00	0.00
3. Legal contraventions	Nr	5	0.6	1	1	1	1	1	1	0	1.00															5.00	5.00
4. Percentage of registered construction contractors trained in env. Law	Nr	20	40	60	60	60	60	60	50	100	100.00															22.00	22.00
5. Percentage of CCU - MMM staff on env. training matrix trained in env. Legislation.	%	0	40	90	90	90	90	90	85	100	70.12															0.00	0.00
6. Percentage of Wildlife Interactions mitigated < 4 months	%	20	60	80	80	80	80	80	80	100	91.67															21.17	21.17
7. Percentage of spillages remediated < 2 months	%	15	70	98	98	98	98	98	98	100	100.00															16.50	16.50
8. Environmental Service Delivery	index	15	60	81.65	81.28	81.08	79.15	77.08	79.75	100	96.07															16.18	16.18
Grand Totals		100																								108.3	108.35

Figure 4-1: Distribution Division Environmental Index, 2008/09

In terms of the question on whether the environmental management system was suitable, adequate and effective in 2008/09, the response on the presentation reads as follows:

- EMS found suitable – EMS established
- EMS partially adequate and effective – need to improve in terms of implementation

The KPI measured during the 2008/11 financial years (Tables 4-4, 4-5 and 4-6) reflected the following on Table 4-6 for the Region:

- Legal contraventions affecting the OHD – performed in all three financial years.
- Repeat legal contraventions - performed in all three financial years.
- Legal contraventions – did not perform in the 2009/10 financial year and partially performed in the 2008/09 and 2010/11 financial years.
- Percentage of registered construction contractors trained in Environmental Law – performed in the 2008/10 financial years and was not measured in the 2010/11 financial year.
- Percentage of CCU – MMM (T11 – M16) staff on environmental training matrix trained in legislation – did not perform during the 2008/10 financial years except 2010/11 financial year.
- Percentage of programme management, MEW and contractor representatives attended EA/EMP intervention – not measured during the 2008/10 financial years, performed during 2010/11 financial year.
- Percentage of wildlife interactions mitigated less than four months – performed in all financial years.
- Percentage of spillages remediated less than two months – performed during 2008/09 financial year, but was no measured during the 2009/11 financial years.
- Percentage of compliance to waste Standard (EPC 32-245) - was no measured during the 2008/10 financial years, did not perform during 2010/11 financial year.
- Percentage of DESDs reviewed per month - was no measured during the 2008/10 financial years, performed during 2010/11 financial year.
- Environmental component of RAS - was no measured during the 2008/09 financial year, performed during 2009/11 financial years.
- Data integrity - was no measured during the 2008/10 financial years, did not perform during 2010/11 financial year.
- Environmental service delivery - performed in all financial years.

Table 4-4: 2008/09 KPI performance

Key Performance Indicator	Target	Actual performance	Comments	Performed (Yes/No)
Legal contraventions affecting the OHD	0	0	Effective. Target met. No legal contravention affecting the OHD.	Yes
Repeat legal contraventions	0	0	Effective. Target met. No repeat legal contravention.	Yes
Legal contraventions	1	1	1 legal contravention.	Partial
Percentage of registered construction contractors trained in environmental law	60	100	Effective. Exceeded target.	Yes
Percentage of CCU-MMM (T11–M16) staff on environmental training matrix trained in legislation	90	70.12	Ineffective. Did not meet the target.	No
Percentage of wildlife interactions mitigated < 4 months	80	91.67	Effective. Exceeded target.	Yes

Key Performance Indicator	Target	Actual performance	Comments	Performed (Yes/No)
Percentage of spillages remediated < 2 months	98	100	Effective. Exceeded target.	Yes
Environmental service delivery	81.65	96.07	Effective. Exceeded target.	Yes
Percentage of programme management, MEW and contractor representatives attended EA/EMP intervention			Not measured	
Percentage of compliance to waste standard (EPC 32–245)			Not measured	
Percentage DESDs reviewed per month			Not measured	
Environmental component of RAS			Not measured	
Data integrity			Not measured	

4.4.2.4 2009/10 management review presentation

The 2009/10 management review presentation outcome reveals that there were two legal contraventions. These constituted the following:

- a) Montagu-Barrydale Phase 1: Environmental non-compliance with a condition of a project environmental record of decision (RoD). During a site audit on 15 May 2009, it was discovered that construction on Farm 210, Derde Heuwel, had commenced without the necessary permit needed that controlled the collection of stone artefacts. However, in closing this legal contravention, an archaeological specialist was appointed to conduct an on-site investigation to assess the extent of the damage and to recommend mitigation. No mitigation was required or recommended. Furthermore, the actions put in place were deemed sufficient by Heritage Western Cape (HWC) and no follow-up action was recommended by the authorities.
- b) Montagu-Barrydale Phase 2: A regulation of NEMA: Environmental Impact Assessment Regulations (2006), Regulation 56(2)(b), dealing with public participation, and stating that landowners within 100 m must be notified was not adhered to during the basic assessment (BA) process. However, in closing this legal contravention, the basic assessment process and public participation for the new substation site was undertaken and an RoD was later received.

4.4.2.5 TSCs' key environmental aspects

The key environmental aspects for the TSCs in that financial year remained the same as in the 2008/09 financial year.

4.4.2.6 MEW's key environmental aspects

The MEW's key environmental aspects for that financial year remained the same as in the 2008/09 financial year.

One of the TSCs' key environmental aspects for that financial year was legal contravention. The target was one legal contravention, but the actual number of incidents amounted to two. However, both these legal contraventions were closed as indicated above and within a reasonable time frame. These legal contraventions did not occur twice within the same financial year, and neither did they affect the OHD, which would have meant that the entire region would get penalised for it on its financial year performance.

In summary, Eskom Distribution: Western Region performed effectively during that financial year. On its index it scored 100% on registered contractors for environmental training and 95.50% on wildlife incidents closed within fewer than four months (which was higher than the previous financial year). Oil spill incidents remediated within two months were removed in that financial year. Furthermore, it scored 64.16% on the CCU-MMM staff training on environmental legislation (which was lower than the previous financial year), and 98% for the environmental component of the RAS audit. However, the region scored 93.29% on environmental service delivery, which was lower than the previous financial year. Refer to figure 4-2 below for the 2009/10 environmental index. Eskom Distribution: Western Region is represented by "W".

DISTRIBUTION DIVISION ENVIRONMENTAL INDEX: 2009/10

Month: March 2010

Key Performance Indicator	Measure	Weight (%)	Target setting values							Regional Performance												Weighted Divisional Score				
			% of Target for "Floor" Score:							60																
			% of Target for "Ceiling" Score:							110																
			Floor Value	Target Value						Ceiling Value	Actual Values						Weighted Score									
	W	S	NW	E	C	N		W	S	NW	E	C	N	W	S	NW	E	C	N							
1. Legal Contraventions affecting the OHD	Nr	20	0.6	0	0	0	0	0	0	0	0.00														22.00	
2. Repeat legal contraventions	Nr	0	0.6	0	0	0	0	0	0	0	0.00															0.00
3. Legal contraventions	Nr	5	0.6	1	1	1	1	1	1	0	2.00															0.00
4. Percentage of registered construction contractors trained in env. Law	Nr	20	40	95	95	95	95	95	90	100	100.00															22.00
5. Percentage of CCU - MMM staff on env. training matrix trained in env. Legislation.	%	0	40	90	90	90	90	90	85	100	64.16															0.00
Interactions mitigated < 4 months	%	20	60	80	80	80	80	80	80	100	95.50															21.55
7. Environmental component of RAS	%	20	70	94	94	94	94	94	94	100	98.00															21.33
8. Environmental Service Delivery	index	15	60	89	89	89	89	89	89	100	93.29															15.60
Grand Totals		100																								102.48

Figure 4-2: Distribution Division Environmental Index, 2009/10

Rich statements that support the effectiveness of the system are the same as for the 2008/2010 financial year.

In terms of the question “was the environmental management system suitable, adequate and effective?”, the response on the 2009/10 presentation reads as follows:

- Provided recommendations implemented for improvement.
- The management review for that financial year found the EMS to be partially suitable, adequate and effective.

Table 4-5: 2009/10 KPI performance

Key performance indicator	Target	Actual performance	Comments	Performed (yes/no)
Legal contraventions affecting the OHD	0	0	Effective. Target met. No legal contravention affecting the OHD.	Yes
Repeat legal contraventions	0	0	Effective. Target met. No repeat legal contravention.	Yes
Legal contraventions	1	2	Ineffective. Did not meet the target.	No.
Percentage of registered construction contractors trained in environmental law	95	100	Effective. Exceeded target.	Yes.
Percentage of CCU-MMM (T11–M16) staff on environmental training matrix trained in legislation	90	64	Ineffective. Did not meet the target.	No.
Percentage of wildlife interactions	80	95.50	Effective. Exceeded target.	Yes.

Key performance indicator	Target	Actual performance	Comments	Performed (yes/no)
mitigated < 4 months				
Environmental component of RAS	94	98	Effective. Exceeded target.	Yes.
Environmental service delivery	89	93.29	Effective. Exceeded target.	Yes.
Percentage of programme management, MEW and contractor representatives attended EA/EMP intervention.			Not measured.	
Percentage of compliance to waste standard (EPC 32–245)			Not measured.	
Percentage DESDs reviewed per month			Not measured.	
Data integrity			Not measured.	

4.4.2.7 2010/11 management review presentation

The 2010/11 management review presentation outcome reveals that there was one legal contravention. This legal contravention constituted the following:

Groblershoop tree-cutting incident: Contravention of provision of National Forest Act (Act 84 of 1998): cutting protected tree without permit. A contractor had the contract to do vegetation management in the Groblershoop TSC area. When attending to a fault on 22/03/2010 at the farm Vaalkop, it was found that a witgat tree was cut and another one was trimmed. Following the incident investigation, it was found that an unknown number of protected trees were cut, as the contractor did not identify protected trees within its working areas as part of its risk assessment before commencement. The protected tree involved was a Category A protected tree, a shepherd's tree (witgat) (*Boscia albitrunca*).

4.4.2.8 TSCs' key significant environmental aspects

The TSCs' key environmental aspects for that financial year remained the same as in the 2008/09 financial year.

4.4.2.9 MEW's key significant environmental aspects

The MEW's key environmental aspects for that financial year remained the same as in the 2008/09 financial year.

One of the TSCs' key environmental aspects for that financial year was legal contravention. The target was one legal contravention and the actual incident was one, compared to two in the previous financial year. This was a great financial year, as there was no legal contravention that affected the OHD, which would have meant that the whole region would be penalised on its financial year performance.

In summary, Eskom Distribution: Western Region also performed effectively during that financial year, even though some scores were below their targets. On its index it scored 93.16% on programme managers, MEW and contractor representatives for attending EA/EMP intervention, 85.71% on wildlife incidents closed within less than four months, 100% on the distribution environmental screening document (DESD) being reviewed per month, 91.63% on

environmental service delivery (which was also lower than 2008–2009 financial year), 93.84% on data integrity, 95% on T11–M16 staff training on environmental legislation, 98% on the environmental component of the RAS audit, and 89% on compliance with Eskom’s Waste Standard. Refer to figure 4-3 below for the 2010/11 environmental index. Eskom Distribution: Western Region is represented by “W”.

DISTRIBUTION DIVISION ENVIRONMENTAL INDEX: 2010/11

Month: March 2011

Key Performance Indicator	Measure	Weight (%)	Target setting values								Regional Performance												Weighted Divisional Score	
			% of Target for "Floor" Score:								60													
			% of Target for "Ceiling" Score:																					110
			Floor Value	Target Value						Ceiling Value	Actual Values						Weighted Score							
	W	S	NW	E	C	N		W	S	NW	E	C	N	W	S	NW	E	C	N					
1. Legal Contraventions affecting the OHD	Nr	20	0.6	0	0	0	0	0	0	0	0	0.00	0.00	0.00	1.00	0.00	1.00	22.00	22.00	22.00	0.00	22.00	0.00	14.67
2. Repeat legal contraventions	Nr	0	0.6	0	0	0	0	0	0	0	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. Legal contraventions	Nr	5	0.6	1	1	1	1	1	1	0	1.00	0.00	3.00	2.00	0.00	6.00	5.00	5.50	0.00	0.00	5.50	0.00	2.67	
5. Percentage of Wildlife Interactions mitigated < 4 months	%	11	60	80	80	80	80	80	80	100	85.71	90.88	87.73	91.88	99.00	82.69	11.31	11.60	11.43	11.65	12.05	11.15	11.53	
6. Environmental component of RAS	%	17	70	94	94	94	94	94	94	100	98.00	98.00	99.00	97.00	98.00	97.00	18.13	18.13	18.42	17.85	18.13	17.85	18.09	
7. Percentage of Programme Management, MEW and contractors representatives attended EA/EMP intervention.	%	16	60	60	60	60	60	60	60	100	93.16	98.20	100.00	100.00	78.00	55.00	17.33	17.53	17.60	17.60	16.72	9.60	16.06	
8. Percentage of compliance to Waste Standard (EPC 32-245)	index	11	60	100	100	100	100	100	100	100	89.00	105.50	96.90	100.20	105.90	107.10	9.79	12.10	10.66	12.10	12.10	12.10	11.47	
9. % DESDs review ed per month	%	11	60	100	100	100	100	100	100	100	100.00	100.00	133.00	108.00	114.00	100.00	11.00	11.00	12.10	12.10	12.10	11.00	11.55	
10. Data Integrity	index	0	60	100	100	100	100	100	100	100	93.84	92.20	83.78	83.78	104.00	87.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
11. Percentage of T11-M16 staff on env. training matrix trained in env. Legislation.	%	9	40	90	90	90	90	90	85	100	95.00	97.30	93.00	100.00	94.00	88.00	9.45	9.66	9.27	9.90	9.36	9.18	9.47	
12. Environmental Service Delivery	index	0	60	88.85	88.85	88.85	88.85	88.85	88.85	100	91.63	105.59	93.31	97.87	91.02	96.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grand Totals		100															104.0	107.5	101.5	81.2	108.0	70.9	95.51	

Figure 4-3: Distribution Division Environmental Index, 2010/11

Rich statements that support the effectiveness of the system are the same as for the 2008/10 financial year.

In terms of the question on whether the environmental management system was suitable, adequate and effective in 2010/11, the response on the presentation reads as follows:

- Provided recommendations implemented for improvement.
- The management review for this financial year found the EMS to be partially suitable, adequate and effective.

Table 4-6: 2010/11 KPI performance

Key performance indicator	Target	Actual performance	Comments	Performed (yes/no)
Legal contraventions affecting the OHD	0	0	Effective. Target met. No legal contravention affecting the OHD.	Yes.
Repeat legal contraventions	0	0	Effective. Target met. No repeat legal contravention.	Yes.
Legal contraventions	1	1	1 legal contravention.	Partial.
Percentage of wildlife interactions mitigated < 4 months	80	85.71	Effective. Exceeded target.	Yes.
Environmental component of RAS	94	98	Effective. Exceeded target.	Yes.
Percentage of	60	93.16	Effective.	Yes.

Key performance indicator	Target	Actual performance	Comments	Performed (yes/no)
programme management, MEW and contractor representatives attended EA/EMP intervention			Exceeded target.	
Percentage of compliance to waste standard (EPC 32–245)	100	89	Ineffective. Did not meet the target.	No
Percentage DESDs reviewed per month	100	100	Effective. Exceeded target.	Yes.
Data integrity	100	93.84	Ineffective. Did not meet the target.	No.
Percentage of CCU-MMM (T11–M16) staff on environmental training matrix trained in legislation	90	95	Effective. Exceeded target.	Yes.
Environmental	88.85	91.63	Effective.	Yes.

Key performance indicator	Target	Actual performance	Comments	Performed (yes/no)
service delivery			Exceeded target.	
Percentage of spillages remediated < 2 months			Not measured.	
Percentage of registered construction contractors trained in environmental law			Not measured.	

Table 4-7: 2008-2011 KPI performance

Key performance indicator	Performed (yes/no)		
	2008/2009	2009/2010	2010/2011
Legal contraventions affecting the OHD	Yes.	Yes.	Yes.
Repeat legal contraventions	Yes.	Yes.	Yes.
Legal contraventions	Partial.	No.	Partial.
Percentage of registered construction contractors trained in environmental law	Yes.	Yes.	Not measured.
Percentage of CCU-MMM (T11-M16) staff on environmental	No.	No.	Yes.

Key performance indicator	Performed (yes/no)		
	2008/2009	2009/2010	2010/2011
training matrix trained in legislation			
Percentage of programme management, MEW and contractor representatives attended EA/EMP intervention	Not measured.	Not measured.	Yes.
Percentage of wildlife interactions mitigated < 4 months	Yes.	Yes.	Yes.
Percentage of spillages remediated < 2 months	Yes.	Not measured.	Not measured.
Percentage of compliance to waste standard (EPC 32-245)	Not measured.	Not measured.	No.
Percentage of DESDs reviewed per month	Not measured.	Not measured.	Yes.
Environmental component of RAS	Not measured.	Yes.	Yes.
Data integrity	Not measured.	Not measured.	No.
Environmental service delivery	Yes.	Yes.	Yes.

4.4.3 Research sub-question 2b

Review previous management reviews conducted between 2008/09–2010/11 financial years in terms of meeting the ISO 14001:2004 requirement, what the outcomes were and how they were implemented, and verify actual implementation of recommendations for continual improvement. Actual implementation will be measured by the achievement of objectives, targets and KPIs.

Management review presentation outcomes are illustrated on Tables 4-8 (2008/09 financial year), 4-9 (2009/10 financial year), and 4-10 (2010/11 financial year) below.

2008/09 management review presentation outcomes

Table 4-8: 2008/09 management review recommendations and outcomes

Issue	Recommendations	Who	Actions
Project permit/ EMP compliance	<ul style="list-style-type: none"> • Address key issues (obtained from EIA project overview presentation) • Notification to Department of Environmental Affairs and Tourism (DEAT) informing them of commencement of construction – environmental practitioner relies on communication from project coordinator (PC) to notify DEAT within the required time frame as per each 	<ul style="list-style-type: none"> • Land Development (LD) environmental staff, Project Management. 	<ul style="list-style-type: none"> • Requirement met. <p>As required per project.</p>

Issue	Recommendations	Who	Actions
	<p>individual RoD. Discussed with project manager (PM) in February 2009.</p>		
	<ul style="list-style-type: none"> Eskom does not have control over RoD compliance on turnkey projects, even though Eskom (as applicant) is at risk if there is non-compliance on a turnkey project; not the consultant. Request consultant to monitor permit/EMP conditions for inclusion in the ROD register. 	<ul style="list-style-type: none"> LD environmental staff, Project Management. 	<ul style="list-style-type: none"> Requirement met. 1st quarter 2009.

Issue	Recommendations	Who	Actions
	<ul style="list-style-type: none"> High turnover of Eskom environmental practitioners – too many environmental assessment practitioners (EAPs) working on a project over the lifecycle of the project leading to break in communication between I&APs and authorities, appeals, and continuity problems on aspects of projects. 	<ul style="list-style-type: none"> Land Development 	<ul style="list-style-type: none"> Requirement met. <p>Review filing system – projects centrally filed.</p>
	<ul style="list-style-type: none"> Appointment of Clerk of Works (COW) as environmental control officers to ensure implementation of conditions of EMP on site – meeting to be 	<ul style="list-style-type: none"> LD environmental staff, Project Management, senior environmental advisor (SEA). 	<ul style="list-style-type: none"> Requirement partially met. <p>Some communication done on this to PM from LD.</p>

Issue	Recommendations	Who	Actions
	<p>held with project management to discuss roles of COW and environmental staff.</p>		
<ul style="list-style-type: none"> • Legal compliance 	<ul style="list-style-type: none"> • Resume environmental legislation training on regional staff • Increase environmental training for project COW e.g. legislation training, EMP/checklist 	<ul style="list-style-type: none"> • SEA • SEA, environmental staff, PM 	<ul style="list-style-type: none"> • Requirement met. <p>Ad hoc attendance as part of contractor training. Target in 2010 environmental authorisation (EA)/EMP training commenced. Legislation training target in 2010/11 year.</p>
<ul style="list-style-type: none"> • Wildlife 	<ul style="list-style-type: none"> • Need to review the wildlife event plant register and Endangered Wildlife Trust (EWT) reporting process to establish whether/how to 	<ul style="list-style-type: none"> • At Distribution Environmental Advisory Committee (DEAC). 	<ul style="list-style-type: none"> • Requirement met. <p>Dealt with by Distribution (Dx) Environmental Manager.</p>

Issue	Recommendations	Who	Actions
	reconcile process.		
<ul style="list-style-type: none"> Waste 	<ul style="list-style-type: none"> Waste management to be reviewed/improved, especially management of fluorescent tubes; disposal at waste disposal sites; impact of new Waste Act on waste management in region. 	<ul style="list-style-type: none"> SEA/Commercial Department. 	<ul style="list-style-type: none"> Requirement met. <p>Included in Waste Management Plan.</p>
<ul style="list-style-type: none"> Environmental aspects, legal requirements, KPIs, plans 	<ul style="list-style-type: none"> Review and implement in units/departments. Need improved implementation of plans. 	<ul style="list-style-type: none"> SEA/line managers 	<ul style="list-style-type: none"> Requirement met. <p>Ongoing, checked in RAS audits.</p>

Issue	Recommendations	Who	Actions
<ul style="list-style-type: none"> Resources and responsibilities 	<ul style="list-style-type: none"> Environment turnover. Graduate in Training (GIT) appointee/training support – Human Resources (HR). Environmental letters of appointment to be signed. 	<ul style="list-style-type: none"> HR <p>Line managers/SEA</p>	<ul style="list-style-type: none"> Requirement partially met. <p>Turnover still problematic, EMS resources still concern.</p>
<ul style="list-style-type: none"> Training and awareness 	<ul style="list-style-type: none"> Need HR custodian for environmental training needs/programme/schedule training support for 2009–2010. Programme for Arbour Week/Environment Week (positive environmental projects for region). Resume environmental legislation training for staff. 	<ul style="list-style-type: none"> HR SEA/LD SEA/line managers /Training and Development (T&D) 	<ul style="list-style-type: none"> Requirement partially met. <p>Renier Venter allocated, but left T&D again.</p> <p>Well supported by management.</p> <p>Done in ad hoc manner as part of contractor training. Need more focus in 2010.</p>

Issue	Recommendations	Who	Actions
<ul style="list-style-type: none"> • Communication 	<ul style="list-style-type: none"> • Increase communication – positive/encouraging messages on environmental issues by environment and management, e.g. management unit site visits, unit site inspections, e-mail. 	<ul style="list-style-type: none"> • SEA/management 	<ul style="list-style-type: none"> • Requirement partially met. <p>Improvement but still not sufficiently done. Request to include environmental issues in leadership inspections.</p>

Most of the ISO 14001:2004 requirements for the management review of the 2008/09 financial year were met. In terms of the objectives, targets and KPIs, Eskom Distribution: Western Region performed effectively as demonstrated in figure 4-1 above. From the table above, it is clear that most of the outcomes were implemented according to the recommendations.

2009/10 management review presentation outcomes

Table 4-9: 2009/10 management review recommendations and outcomes

Issue	Recommendations	Status
Management support	<ul style="list-style-type: none"> Management visibility, involvement and support for the environment. 	<ul style="list-style-type: none"> Requirements partially met. <p>Some involvement in environmental awareness days.</p>
	<ul style="list-style-type: none"> Management to include environment as part of leadership inspection. 	<ul style="list-style-type: none"> Requirements partially met. <p>Proposal developed and approved at SHEQ. However, do not see this implemented in practice.</p>
<ul style="list-style-type: none"> Resources 	<ul style="list-style-type: none"> Increase EMS resources for implementation. 	<ul style="list-style-type: none"> Requirement met. <p>Land Development structural change to focus on project compliance – second environmental advisor appointed and increase of 3 environmental practitioners. However, no dedicated EMS</p>

Issue	Recommendations	Status
		resources appointed – 2 appointees interviewed but affected by HR embargo.
Projects risks	<ul style="list-style-type: none"> Provision must be made for the allocation of funds for an environmental control officer (ECO) during construction to ensure environmental compliance and reduce legal risks. 	<ul style="list-style-type: none"> Requirement met. ECO appointed as required internally or externally.
	<ul style="list-style-type: none"> Implementation of 2009–2010 strategies to improve performance on projects and avoid contraventions and incidents. 	<ul style="list-style-type: none"> Requirement met. Special training intervention for staff involved with projects to increase awareness of EA/EMP conditions. Awareness sessions held with staff on new EIA regulations.
Operational aspects	<ul style="list-style-type: none"> Oil spill recommendations: improvement in reporting time frames as per Environmental Liaison Committee (ELC) procedure. 	<ul style="list-style-type: none"> Requirement met. Incident investigation process presented to staff.

Issue	Recommendations	Status
<ul style="list-style-type: none"> Waste Management Plan 	<ul style="list-style-type: none"> Implement the Waste Action Plan for the region. 	<ul style="list-style-type: none"> Requirement partially met. <p>Waste reporting process in place, ad hoc letters of appointment not signed due to Eskom structural changes. New waste KPI implemented in Dx, monitored monthly as part of the environmental index.</p>
<ul style="list-style-type: none"> Climate change 	<ul style="list-style-type: none"> Awareness, regionalise the Dx Climate Change Strategy. 	<ul style="list-style-type: none"> Requirement met. <p>Climate change fact sheet was published by Corporate Division in March 2010. Climate change awareness included in the Eskom and the environment training rolled out in the region.</p>
<ul style="list-style-type: none"> Audit findings 	<ul style="list-style-type: none"> Implement the recommendations (if applicable). 	<ul style="list-style-type: none"> Requirement met. <p>Implement if required.</p>

Most of the ISO 14001:2004 requirements for the management review of the 2009/10 financial year were met. In terms of the objectives, targets and KPIs, Eskom Distribution: Western Region performed effectively, as demonstrated in figure 4-2 above. From the table above, it is clear that most of the outcomes were implemented according to the recommendations.

2010/11 management review presentation outcomes

Table 4-10: 2010/11 management review recommendations and outcomes

General requirements	Status
<p>EMS scope comprises the region (departments) and contractors</p>	<ul style="list-style-type: none"> • Requirements partially met. <p>Organisational structures changed, proposed scope of EMS defined by Dx manager in terms of which departments are included. Scope to be confirmed and documented in regional EMS procedure 7.</p>
<ul style="list-style-type: none"> • Environmental policy 	<ul style="list-style-type: none"> • Requirements met. <p>New SHEQ Policy published and distributed in region.</p>
<ul style="list-style-type: none"> • Aspects 	<ul style="list-style-type: none"> • Requirements partially met. <p>National aspects register consolidated. Regional aspects registers available to be reviewed per CNC. Departments giving consideration to national register.</p>
<ul style="list-style-type: none"> • Legal and other requirements 	<ul style="list-style-type: none"> • Requirements partially met. <p>Legal register done via head office contract with Imbewu. Imbewu register to be updated to reflect revised national aspects. Regional aspects to reference Imbewu register. By-laws to be updated.</p>

General requirements	Status
<ul style="list-style-type: none"> Objectives, targets and programme(s) 	<ul style="list-style-type: none"> Requirements partially met <p>National targets in process of being set for new year. Departments and CNCs to set and implement KPIs for their aspects, based on their own unit aspect registers.</p>
<ul style="list-style-type: none"> Resources, roles, responsibility and authority 	<ul style="list-style-type: none"> Requirements partially met. <p>Currently 2 EMS staff members and 1 GIT. Permanent resources to be allocated, based on revised structural changes. Line managers to be appointed (EMS for units) in terms of new structures.</p>
<ul style="list-style-type: none"> Competence, training and awareness 	<ul style="list-style-type: none"> Requirements partially met. <p>Regular awareness events take place. Training takes place as per environmental matrix and training records.</p> <p>Some of external environmental contracts expired. Contracts to be finalised by the Training Department. Training programme for environment to be revised.</p>
<ul style="list-style-type: none"> Communication 	<ul style="list-style-type: none"> Requirements partially met. <p>Revise communications and complaints procedure. Create awareness of routing environmental complaints/incidents to regional staff (walk-in centres/contact centre/CNCs).</p>

General requirements	Status
<ul style="list-style-type: none"> Documentation 	<ul style="list-style-type: none"> Requirements partially met. <p>Procedures to be revised and published regionally.</p>
<ul style="list-style-type: none"> Control of documents 	<ul style="list-style-type: none"> Requirements partially met. <p>Old procedures to become obsolete/removed from circulation in region once procedures have been updated/superseded.</p>
<ul style="list-style-type: none"> Operational control 	<ul style="list-style-type: none"> Requirements partially met. <p>Currently audited via RAS. List of procedures compiled. Western Cape Operating Unit (WCOU) operational procedures to be drafted where relevant. Communicate relevant procedures to departments.</p>
<ul style="list-style-type: none"> Emergency preparedness and response 	<ul style="list-style-type: none"> Requirements met.

General requirements	Status
<ul style="list-style-type: none"> Monitoring and measurement 	<ul style="list-style-type: none"> Requirements partially met. <p>Departments to review KPIs per CNC/department and monitor the implementation of KPIs set for their departments/CNCs.</p>
<ul style="list-style-type: none"> Evaluation of compliance 	<ul style="list-style-type: none"> Requirements partially met. <p>Ensure that legal compliance evaluation is performed according to a programme. External legal compliance audits (as per Dx plan) or regional local evaluations.</p>
<ul style="list-style-type: none"> Non-conformity, corrective and preventive action 	<ul style="list-style-type: none"> Requirements partially met. <p>Environmental incidents (including oil spills, wildlife and legal) loaded onto the Systems, Applications and Products in data processing (SAP) for Environment, Health and Safety (EHS). Line managers to report incidents timeously as per incident investigation procedures.</p>
<ul style="list-style-type: none"> Control of records 	<ul style="list-style-type: none"> Requirements met.

General requirements	Status
<ul style="list-style-type: none"> <li data-bbox="283 316 409 341">• Audits 	<ul style="list-style-type: none"> <li data-bbox="955 316 1365 341">• Requirements partially met. <p data-bbox="861 365 1869 446">Region to be audited on ISO by head office as per Dx audit programme. RAS environmental questions to be expanded nationally.</p>
<ul style="list-style-type: none"> <li data-bbox="283 584 598 609">• Management review 	<ul style="list-style-type: none"> <li data-bbox="955 584 1260 609">• Requirements met.

Most of the ISO 14001:2004 requirements for the management review of the 2010/2011 financial year were partially met.. In terms of the objectives, targets and KPIs, Eskom Distribution: Western Region performed effectively, as demonstrated in figure 4-3 above. From the table above, it is clear that some of the outcomes were implemented even though most of them partially met the recommendations.

In summary, Eskom Distribution: Western Region’s management review presentations outcomes during the three financial years reveal that most of the ISO 14001:2004 requirements for the management review were met. In terms of the objectives, targets and KPIs, Eskom Distribution: Western Region performed effectively. As compared to the 2010/11 financial year, It is clear that most of the outcomes were implemented according to the recommendations during the 2008/10 financial years.

4.5 Research sub-question 4: To what extent do management reviews contribute to the continual improvement of the implementation of the ISO 14001:2004 environmental management system standard within Eskom Distribution: Western Region?

4.5.1 Research sub-question 4a

Based on the outcome of the management reviews conducted between the 2008/09 and 2010/11 financial years, determine if the management reviews added value and led to continual improvement in the environmental performance of the TSCs and MEW.

4.5.1.1 2008/09 management review presentation outcomes

Most of the management review recommendations were met (refer to Table 4-8) and therefore management reviews added value and led to continual improvement in the environmental performance of the TSCs and MEW. This has also been supported by the rich statements from the TSCs when they were asked whether they had seen an improvement or a decline in the environmental performance of the TSC and/or MEW due to management reviews conducted annually.

4.5.1.2 2009/10 management review presentation outcomes

Most of the management review recommendations were met (refer to Table 4-9) and therefore management reviews added value and led to continual improvement in the environmental performance of the TSCs and MEW. This has also been supported by the rich statements from the TSCs when they were asked whether they had seen an improvement or a decline in the environmental performance of the TSC and/or MEW due to management reviews conducted annually.

4.5.1.3 2010/11 management review presentation outcomes

Most of the management review recommendations were partially met (refer to Table 4-10) and therefore management reviews added value and led to continual improvement in the environmental performance of the TSCs and MEW. This has also been supported by the rich statements from the TSCs when they were asked whether they had seen an improvement or a

decline in environmental performance in the TSC and/or MEW due to management reviews conducted annually.

4.5.2 Research sub-question 4c

Compare the environmental management performance using KPIs, success using the RAS results through an assessment of databases, and behaviour using the questionnaire and interviews, if required.

4.5.2.1 2008/09 financial year

Eskom Distribution: Western Region performed effectively during this financial year; on its index it scored 100% on registered contractors for environmental training, 91.67% on wildlife incidents closed within less than four months, 100% on oil spill incidents remediated within two months, and 96% on environmental service delivery (a score measured through closed and open environmental incidents). However, the region lacked on training the CCU-MMM staff on environmental legislation, and only scored 10.12%.

No RAS audits were conducted in the 2008/09 financial year.

When TSC participants were asked whether the management review recommendations were implemented, five of the participants responded positively to this question, namely TSC2, 9, 10, 14 and 17. TSC3, 11 and 15 did not know whether the management review recommendations were implemented. Further, when they were asked whether they have seen an improvement or a decline in environmental performance in the TSC and/or MEW due to management reviews conducted annually, all the participants' responses were that they had seen an improvement in environmental performance due to annual management reviews, except TSC11, who had not seen the management review results.

Comparing the KPIs and responses from the questionnaire responses, one would say management reviews do bring continual improvement in the region.

4.5.2.2 2009/10 financial year

Eskom Distribution: Western Region performed effectively during that financial year. On their index they scored 100% on registered contractors for environmental training, 95.50% on wildlife

incidents closed within less than four months (which was higher than the previous financial year), 64.16% on the CCU-MMM staff training on environmental legislation (which was far higher than the 10.12% of the previous financial year), and 98% on the environmental component of the RAS audit. However, they scored 93.29% on environmental service delivery, which was lower than the previous financial year. Oil spill incidents remediated within two months were removed for that financial year.

In that financial year, environmental questions were included in the RAS audit. The score of 98% was obtained on the environmental component of RAS for the entire Eskom Distribution: Western Region.

When TSC participants were asked if the management review recommendations were implemented, five of the participants responded positively to this question, namely TSC2, 9, 10, 14 and 17. TSC3, 11 and 15 did not know whether the management review recommendations were implemented. Further, when they were asked whether they had seen an improvement or a decline in environmental performance in the TSC and/or MEW due to management reviews conducted annually, all the participants' responses were that they had seen an improvement in environmental performance, except TSC11, who had not seen the management review results.

Comparing the KPIs, RAS results and responses from the questionnaire responses, one would say management reviews do bring continual improvement in the region.

4.5.2.3 2010/11 financial year

Eskom Distribution: Western Region also performed effectively during that financial year, even though some scores were below the targets. On its index it scored 93.16% on programme managers, MEW and contractor representatives for attending EA/EMP intervention, 85.71% on wildlife incidents closed within less than four months, 100% on distribution environmental screening documents (DESD) reviewed per month, 91.63% on environmental service delivery (which was also lower than the 2008/09 financial year), 93.84% on data integrity, 95% on T11–M16 staff training on environmental legislation, 98% on the environmental component of the RAS audit, and 89% on compliance with Eskom's Waste Standard.

In that financial year, environmental questions were included in the RAS audit. The score of 98% was also obtained on the environmental component of RAS for the entire Eskom Distribution: Western Region.

When TSC participants were asked whether the management review recommendations had been implemented, five of the participants responded positively to this question, namely TSC2, 9, 10, 14 and 17. However, TSC3, 11 and 15 did not know whether the management review recommendations were implemented. Further, when they were asked whether they had seen an improvement or a decline in environmental performance in the TSC and/or MEW due to management reviews being conducted annually, all the participants' responses were that they had seen an improvement in environmental performance due to annual management reviews, except TSC11, who had not seen the management review results.

Comparing the KPIs, RAS results and questionnaire responses, one would say management reviews do bring continual improvement in the region, even though some of the KPI scores were below target.

4.5.3 Research sub-question 4b

4.5.3.1 Results of the ISO 14001 external audit conducted from 23 to 25 April 2007

In accordance with Eskom's commitment to manage the environmental impact of its operational activities on the environment, the Corporate Technical Audit Department (CTAD) commissioned Bembani Sustainability Training (Pty) Ltd to conduct ISO 14001:2004 EMS conformance audits on selected Eskom distribution facilities in all regional operations. The ISO 14001:2004 EMS conformance audit was undertaken at Eskom Distribution: Western Region from 23 to 25 April 2007, a financial year prior to the ones forming part of this study. Thus, no external audit was conducted during the 2008/09, 2009/10, and 2010/11 financial years. A commendable level of management commitment and awareness of the ISO 14001 environmental management system standard was observed. It should also be noted that most members of the management team attended both the opening and the closing meetings. The majority of the personnel interviewed showed an acceptable level of environmental awareness.

The scope of the audit was limited to all facilities selected, activities, services and personnel, as well as contractors of Eskom Distribution: Western Region at the time of the audit. This audit reported a total of 11 findings or non-conformances as indicated on Table 4-11 below. There was one (1) finding under the environmental aspects; three (3) under legal and other requirements; one (1) under training, awareness and competence; two (2) under documents control; one (1) under operational control; two (2) under emergency preparedness and

response; and one (1) under evaluation of compliance. There were no findings in all other ISO 14001 elements including element 4.6 (management review). It should be noted that some areas of commendable practices were also observed and reported. At the end of the audit, it was concluded, based on objective evidence provided at the time of the audit that the EMS implemented at Eskom Distribution: Western Region conformed to the requirements of the ISO 14001:2004 standard.

Audit objectives

The objectives of the ISO 14001:2004 EMS audit were as follows:

1. To establish the current status (at the time) of ISO 14001:2004 EMS implementation at Eskom Distribution: Western Region
2. To establish conformance (at the time) of the Eskom Distribution: Western Region's EMS to ISO 14001:2004.

Audit scope

The audit scope was limited to environmentally related activities and facilities at Eskom Distribution: Western Region. The audit methods included physical inspections, the perusal of documented procedures, observations and interviewing relevant site personnel. It covered policies, practices, procedures, processes and systems of Eskom Distribution: Western Region and its service providers, suppliers and contractors who are part of the EMS scope and were on site at the time of the audit.

Audit criteria

The environmental management system conformance audit was conducted against the ISO 14001:2004 EMS requirements with guidance for use.

Areas with commendable practices

Below is a list of some of the best practices that were noted at the time of the audit:

Malmesbury TSC

- Lack of any recorded oil spills or pollution over the past two years (2005–2006).

Piketberg TSC

- They operated a fluorescent tube crusher and disposed of the crushed material correctly (at a hazardous waste disposal site).
- Emergency evacuation mock drill and evaluation were recorded for analysis and corrective actions.
- Employees were scheduled for hazardous waste management training.
- TSO (Technical Service Officer) had a list of the latest approved hazardous material waste disposal sites.
- The aspect register extended beyond the generic register seen in other areas.
- Liaison with local authority with regard to oil storage specifications.

Grabouw TSC

- The housekeeping standard is commendably high due to the use of cages for storage of construction and maintenance materials.
- Emergency plan submitted for audit.
- Oil separator installed at vehicle wash bay.

Best practices common to all TSCs

- High standard of housekeeping demonstrated by a lack of historical oil spills and haphazard storage of spares, construction material, etc.
- The hospitality, enthusiasm, openness and co-operation of all personnel resulted in mutually beneficial audits.
- Acceptance of the findings added value to improve their environmental performance.
- Agendas of meetings included environmental matters as a separate heading.
- Specially designed bags used for the transportation of leaking transformers.

Management review

The management review arrangements in the western region met all requirements of the ISO 14001:2004 relating to management review. Minutes of previous meetings were observed and covered all the necessary issues.

Table 4-11: Summary of findings from the ISO 14001 external audit report

Clause	Clause description or heading	Number of audit findings
4.1	General requirements	0
4.2	Environmental policy	0
4.3.1	Environmental aspects	1
4.3.2	Legal and other requirements	3
4.3.3	Objectives and targets	0
4.3.4	Environmental management programmes (EMPs)	0
4.4.1	Resources, roles, responsibility and authority	0
4.4.2	Training, awareness and competence	1
4.4.3	Communication	0
4.4.4	Environmental management system documentation	0
4.4.5	Document control	2
4.4.6	Operational control	1
4.4.7	Emergency preparedness and response	2
4.5.1	Monitoring and measurement	0

Clause	Clause description or heading	Number of audit findings
4.5.2	Evaluation of compliance	1
4.5.3	Non-conformance and corrective and preventive action	0
4.5.4	Control of records	0
4.5.5	Internal audit	0
4.6	Management review	0

Conclusion based on the ISO 14001 external audit

On the basis of objective evidence observed at the time of the audit, it was concluded that the Eskom Distribution: Western Region's ISO 14001:2004 EMS conformed to the minimum requirements of the standard. In reaching this conclusion, the following key ISO 14001 issues were considered:

- The scope of the EMS covered all business units, and had been properly documented.
- A number of operational procedures were observed and found to be implemented.
- The procedure on the control of documents was exceptionally well developed, although implementation required improvement.
- The level of management commitment was commendable. This was also evidenced by the minutes of the management review meetings.
- Key environmental aspects had been identified and documented, and several environmental programmes were observed.
- Arrangements for competence, training and awareness were in place.

4.6 Conclusion

Out of the TSC senior supervisor questionnaires that were returned, it was clear that all the participants had seen an improvement in environmental performance due to annual management reviews, except TSC11, who had not seen management review results. TSC10 further stated that environmental practitioners had become much more visible in the TSCs/CNCs, but she or he would like the environmental practitioners to form part of production plan meetings. The environmental incidents had declined, as observed by TSC2 and 3. TSC2 further stated that incidents had also decreased not only in her or his TSC, but also in the surrounding TSCs. He stated that legal contraventions had not occurred for a number of years. TSC9 based his positive response on the fact that there were no findings on the audits conducted in her or his TSC. The index for all the financial years of this study further shows that Eskom Distribution: Western Region performed effectively.

Out of the SHEQ management questionnaires that were returned, M1, 16 and 22 all observed an improvement (continual improvement as per the ISO 14001 requirement). The improvement is in the form of processes, gap analysis, increased environmental awareness, risks being addressed and programmes being agreed upon. M1, 19 and 22 viewed the importance of a company being ISO 14001-certified as the fact that certification brought improvement in the company's processes, improved quality, improved operation, improved risk management, and as a result, performance improvement. Both M1 and 18 viewed ISO 14001 certification as the application of international standards on its activities, which also relate to quality improvement. M16 and 18 also aligned ISO 14001 certification with international standards. M16 further stated that the certification assists an organisation in achieving compliance to legislation and ensuring the commitment of management and employees as the company makes its employees aware of its objectives. Training in the EMS and improved communication will assist in changing the thought culture.

All the SHEQ management participants have seen a positive improvement in the environmental performance within Eskom Distribution: Western Region. The improvements include awareness and reporting, a reduction in legal contraventions, participation in environmental interventions (for example, the recycling programme, which coincides with the reduce and recycle initiative and ISO 14001 objectives to reduce waste), managed better work, improved contractor management (distribution powerlines and substations are mostly constructed by contractors), good performance against targets, strict monitoring/audits, requirements communicated clearly to those affected and incidents being fully investigated. With such a positive response to this

question and questions 7, 9, 13 and 14 (even though the response rate was low), one can state that management reviews within Eskom Distribution: Western Region are effective and do bring about continual improvement.

Most of the ISO 14001:2004 requirements for the management review for all financial years for this study were met. In terms of the objectives, targets and KPIs, Eskom Distribution: Western Region also performed effectively and most of the outcomes were implemented according to the recommendations.

Further, based on the external audit conducted from 23 to 25 April 2007, it is clear that Eskom Distribution: Western Region conformed to the minimum requirements of the ISO 14001:2004 EMS. Their management reviews also met all requirements of the ISO 14001:2004 relating to management review. This was proven by minutes of previous meetings that covered all the necessary issues that were audited. Thus, the existence of management reviews contributed to ensuring that the ISO system was scrutinised, and effective measures were improved upon, while ineffective measures were removed.

Below (Table 4-12) is a schematic representation of how the different sources proved that management reviews done by Eskom Distribution: Western Region were, in fact, effective.

Table 4-12: A schematic representation of the different sources that prove that management reviews done by Eskom Distribution: Western Region were effective

Sources used	Effective/not effective	Evidence
Questionnaires (TSC senior supervisors and SHEQ management members)	Yes.	All the SHEQ management participants had seen a positive improvement in the environmental performance within the Eskom Distribution: Western Region. The improvements include awareness and reporting, a reduction in legal contraventions, participation in environmental interventions (for example, a recycling programme, which coincides

Sources used	Effective/not effective	Evidence
		<p>with the reduce and recycle initiative and ISO 14001 objectives to reduce waste), better managed work, improved contractor management (distribution powerlines and substations are mostly constructed by contractors), good performance against targets, strict monitoring/audits, requirements communicated clearly to those affected and incidents being fully investigated.</p> <p>All the TSC participants had seen an improvement in environmental performance due to annual management reviews, except TSC11, who had not seen the management review results. TSC10 further stated that environmental practitioners had become much more visible in the TSCs/CNCs. On a follow-up of this question, it was observed that seemingly, there is more awareness and compliance in the TSCs, as supported by the responses for this question, specifically those of TSC14 and 17. The environmental incidents had</p>

Sources used	Effective/not effective	Evidence
		<p>declined, as observed by TSC2 and 3. TSC2 further stated that incidents had also decreased not only in her or his TSC, but also in the surrounding TSCs. She or he stated that legal contraventions had not occurred for a number of years. TSC9 based her or his positive response on the fact that there were no findings on the audits conducted in her or his TSC. TSC10 and 15 had gone as far as implementing standards and procedures with their staff in order to comply and therefore avoid legal contraventions and possible environmental incidents, as observed by TSC2. TSC17 stated that the TSC staff applied bird flappers where birds were electrocuted or collided with the powerline(s). This was done so as to prevent future collisions and electrocutions.</p>
Databases		
Management review presentations	Yes.	Most of the management review recommendations conducted in the 2008/09 and 2009/10 financial years were met, with the exception of the

Sources used	Effective/not effective	Evidence
		2010/11 ones that were partially met.
KPIs	Yes.	The actual performance of the KPIs that were measured from the 2008 to 2011 financial years had exceeded the targets most of the times.
RAS audit results	Yes.	98% was achieved in both 2009/10 and 2010/11, the only financial years RAS audit results were measured.
ISO 14001 external audit results	Yes.	The conclusion of the audit results states that Eskom Distribution: Western Region conformed to the minimum requirements of the ISO 14001:2004 EMS. Their management reviews also met all requirements of the ISO 14001:2004 relating to element 4.6.

In summary, effective management reviews made a positive contribution to the improvement of the environmental management system, ISO 14001:2004.

CHAPTER 5: CONCLUSION

5.1 Conclusion

The EMS management review is designed to ensure ongoing and practical involvement by the top management of an organisation. The management review offers leadership the opportunity to determine if the current EMS is suitable, adequate and effective for its intended purposes and the decisions or actions relative to the EMS that need to be made to ensure continual improvement. Keeping this in mind, this study was designed to assess the effectiveness of the management review as one of the ISO 14001:2004 continual improvement elements within Eskom Distribution: Western Region, focusing mostly on the TSCs and MEW. Based on the results of the assessment, the following conclusions are/may be made on the research sub-questions:

1) Do management reviews conducted by the Eskom Distribution: Western Region address EMS element 4.6 requirements?

It can be concluded from the results of Table 4-1 that Eskom Distribution: Western Region addressed EMS element 4.6 requirements. Thus, all the requirements listed under element 4.6 were all part of all management review presentations for the 2008/09 – 2010/11 financial years. Recommendations for improvements that were made on each financial year were carried over to the next financial year and closed (implemented); changing circumstances including developments in legal and other requirements related to the Region's environmental aspects were always brought into the attention of the top management in order to align the aspects, objectives, targets, KPIs, EMP and legal and other legal requirements for the Region. The environmental performance of the Region was also monitored to assist the Region on continual improvement of the EMS.

Most of the ISO 14001:2004 requirements for the management review for all financial years for this study were met. In terms of the objectives, targets and KPIs, Eskom Distribution: Western Region also performed effectively and most of the outcomes were implemented according to the recommendations.

2) Do management reviews identify key significant environmental aspects adequately?

All key significant environmental aspects have been adequately identified. Four out of six participants (SHEQ management) responded with a “yes” when they were asked this question. M19 did not know, while M13 claimed to have never participated in the management reviews. Further, the ISO 14001 external audit concluded that key environmental aspects had been identified and documented.

Based on the KPIs, RAS results and management review presentations, specifically on the KPIs that were measured across the 2008–2011 financial years, management reviews had proved to be effective, hence most of the times the targets were exceeded as shown in table 4-4.

3) To what extent is Safety, Health, Environment and Quality (SHEQ) management involvement and leadership drive evident in terms of management review and within the TSCs and MEW?

TSC participants responded positively to this question, except TSC10, who was not sure. According to their view, full support of the EMS by top management is demonstrated in the form of SHEQ policy, the environmental training of TSC staff, communication through various media channels like magazines, public statements in newspapers and television, various policies and procedures and ensuring compliance, investing in hiring more environmentally informed staff to ensure that every environmental incident is investigated, and applying recommendations to findings. Top management also provided funding to address environmental issues, committed itself to the EMS while putting pressure on the TSCs to comply, and found solutions on audit findings.

The level of management commitment was found to be commendable by the ISO 14001 external audit conducted during the 2007/08 financial year, and it is unfortunate that there was no ISO 14001 external audit conducted between the 2008 and 2011 financial years.

4) To what extent do management reviews contribute to the continual improvement of the implementation of the ISO 14001:2004 environmental management system standard within Eskom Distribution: Western Region?

Most of the management review recommendations conducted in the 2008/09 and 2009/10 financial years were met, with the exception of some in 2010/11 that were partially met.

Therefore, one can state that management reviews added value and led to continual improvement in the environmental performance of the TSCs and MEW. This has also been supported by the rich statements from the TSC senior supervisors, who responded positively when they were asked whether they had seen an improvement or a decline in environmental performance in the TSC and/or MEW due to management reviews conducted annually. One TSC senior supervisor had experienced that environmental practitioners had become much more visible in the operations and saw an opportunity for the environmental practitioners to form part of the production plan meetings. Environmental incidents had declined, as observed by TSC2 and 3. TSC2 further stated that incidents have also decreased not only in her or his TSC, but also the surrounding TSCs. She or he stated that legal contraventions had not occurred for a number of years. TSC9 based her or his positive response on the fact that there were no findings on the audits conducted in her or his TSC.

Based on the external audit conducted from 23 to 25 April 2007, however, outside the 2008/09, 2009/10 and 2010/11 financial years that form part of this study, it is clear that Eskom Distribution: Western Region conformed to the minimum requirements of the ISO 14001:2004 EMS. Their management reviews also met all requirements of the ISO 14001:2004 relating to management review. This was proven by the minutes of previous meetings that covered all the necessary issues that were audited. Thus, the existence of management reviews contributed to ensuring that the ISO System was scrutinised, and that effective measures were improved and ineffective ones removed.

Based on the KPIs, RAS results and management review presentations, specifically on the KPIs that were measured across the 2008–2011 financial years, management reviews prove to have been effective, as most of the times the targets were exceeded.

Without effective management reviews taking place every financial year (2008/09, 2009/10 and 2010/11), one would not have been able to determine the performance of the region. In conclusion, effective management reviews make a positive contribution to the improvement of the environmental management system, ISO 14001:2004, as demonstrated by Eskom Distribution: Western Region. Hence, as per element 4.6, top management ensured the continual suitability, adequacy and effectiveness of the EMS. This continued suitability, adequacy and effectiveness had been supported by the rich statements from the TSC senior supervisors as well as the 2007/08 ISO 14001 external audit.

Based on the summary of the sub-research questions above, the main research question which asks, “what effect do management reviews have on the continual improvement of the implementation of the ISO 14001:2004 environmental management system standard within Eskom Distribution: Western Region?”, it can be deduced that Eskom Distribution: Western Region’s management reviews are not done as a dry review, they bring positive contribution to the continual improvement of the implementation of the ISO 14001:2004 environmental management system standard, even though there is room for improvement.

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ANNEXURE 1: RESEARCH QUESTIONNAIRES (TSCS AND SHEQ MANAGEMENT)

MANAGEMENT QUESTIONNAIRE

I am Nokhuthala Hlongwana, a Masters Degree candidate in Environmental Management at the North West University. This questionnaire forms part of my Masters Research project: An assessment of the effectiveness of management reviews as an ISO 14001:2004 improvement element: An Eskom Distribution Case Study. Please be assured that the questionnaire will be anonymous. The aim of this study is to assess the effectiveness of management reviews as one of the key continual improvement elements of the ISO 14001:2004 environmental management system within Eskom Distribution: Western Region.

1. Have you participated in the EMS management reviews before?

Please mark: Y/N

2. If so, what financial years?

.....
.....

3. What is your expectation from the outcome of such a management review?

.....
.....
.....
.....
.....

4. Do you know if the management reviews recommendations were implemented?

Please mark: Y/N/ DON'T KNOW

5. If yes, how do you know?

.....
.....

6. What measures are in place to make sure that such recommendations are implemented within reasonable time-frames?

.....
.....

7. According to your own view, what is the aim of management review?

.....
.....

8. Does the aim bring about results?

Please mark: Y/N/ DON'T KNOW

9. If so, what are the results?

.....
.....

10. According to your own view what is the importance of having a company/division ISO 14001: 2004 certified?

.....
.....
.....
.....

11. How is it decided on how to include EMS elements?

.....
.....

12. What do you consider as the key significant aspects within Minor Engineering Works and Major Engineering Works (MEW) and TSCs?

Minor Engineering Works.....

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.....
.....
.....

Major Engineering Works.....

.....
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.....
.....

TSCs.....

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.....
.....

13. Do you think management reviews address major significant aspects?

Please mark: Y/N/DON'T KNOW

14. If yes, how?

Minor Engineering Works.....

.....
.....
.....
.....

Major Engineering Works.....

.....
.....

TSCs.....
.....
.....
.....
.....

16. Have you seen an improvement or a decline in environmental performance within the region and why do you say so?

Please mark: Y/N/DON'T KNOW

If yes.....
.....
.....
.....
.....If

no.....
.....
.....
.....

Thank you for your time.

TECHNICAL SERVICE CENTRES' SENIOR SUPERVISOR QUESTIONNAIRE

I am Nokhuthala Hlongwana, a Masters Degree candidate in Environmental Management at the North West University. This questionnaire forms part of my Masters Research project: An assessment of the effectiveness of management reviews as an ISO 14001:2004 improvement element: An Eskom Distribution Case Study. Please be assured that the questionnaire will be anonymous. The aim of this study is to assess the effectiveness of management reviews as one of the key continual improvement elements of the ISO 14001:2004 environmental management system within Eskom Distribution: Western Region.

1. What is your role in the Environmental Management System (EMS), ISO 14001:2004?

.....
.....
.....
.....

2. Have your Field Services Centre Manager participated in the EMS management reviews?

Please mark: Y/N/ DON'T KNOW

3. What is your expectation from the outcome of such management reviews?

.....
.....
.....
.....
.....

4. Do you know if the management reviews recommendations were implemented?

Please mark: Y/N/DON'T KNOW

5. If yes, how do you know?

.....
.....

6. What measures are in place to make sure that such recommendations are implemented within reasonable time-frames?

.....
.....

7. According to your own view, what is the aim of management review?

.....
.....

8. Does the aim bring about results?

Please mark: Y/N/DON'T KNOW

9. If so, what are the results?

.....
.....

10. What do you consider as the key significant aspects within Minor Engineering Works/Major Engineering Works (MEW) and/or TSCs?

Minor Engineering Works.....
.....
.....
.....
.....

Major Engineering Works.....
.....
.....
.....
.....

TSCs.....
.....
.....
.....
.....

11. Do you think management reviews address findings of internal/external audits within Minor Engineering Works/Major Engineering Works (MEW) and/or TSCs?
Please mark: Y/N/DON'T KNOW

12. If yes, how? Please give answer where relevant to you.

Minor Engineering Works.....
.....
.....
.....
.....

Major Engineering Works.....
.....
.....
.....
.....

TSCs.....
.....

.....
.....
.....

13. If no, how and how can they improve?

How?

Minor Engineering Works.....
.....
.....
.....

Major Engineering Works.....
.....
.....
.....

TSCs.....
.....
.....
.....

How can they improve?

Minor Engineering Works.....
.....
.....
.....

Major Engineering Works.....
.....
.....
.....

TSCs.....
.....
.....
.....

14. According to your own view is top management fully supportive of EMS?

Please mark: Y/N

If yes, how?.....

.....
.....
.....

.....If no, how can they get involved?.....

.....
.....
.....

15. Due to management reviews conducted annually, have you seen an improvement or a decline in environmental performance in the TSC and/or MEW?

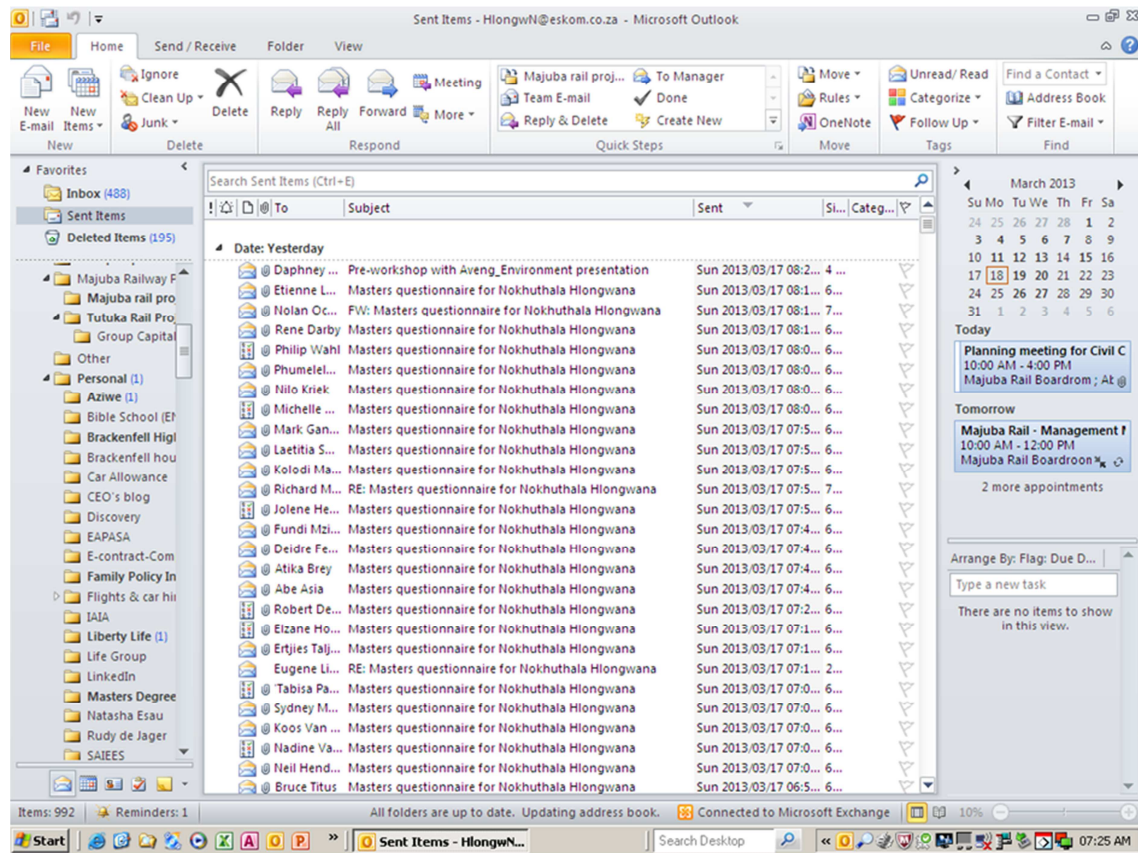
.....
.....
.....
.....

16. Why do you say so?

.....
.....
.....
.....

Thank you for your time.

ANNEXURE 2: SEVERAL REQUESTS IN THE FORM OF E-MAILS THAT WERE SENT TO THE TARGET GROUP



Sent Items - HlongwN@eskom.co.za - Microsoft Outlook

File Home Send / Receive Folder View

New E-mail New Items Ignore Clean Up Delete Reply Reply All Forward More Meeting To Manager Done Create New Reply & Delete OneNote Unread / Read Categorize Follow Up Tags Move Rules Categorize Find a Contact Address Book Filter E-mail Find

Search Sent Items (Ctrl-E)

To	Subject	Sent	Size	Categor...
Mark Gan...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:5...	6...	
Laetitia S...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:5...	6...	
Kolodi Ma...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:5...	6...	
Richard M...	RE: Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:5...	7...	
Jolene He...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:5...	6...	
Fundi Mzi...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:4...	6...	
Deidre Fe...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:4...	6...	
Atika Brey	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:4...	6...	
Abe Asia	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:4...	6...	
Robert De...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:2...	6...	
Elzane Ho...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:1...	6...	
Ertjies Taj...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:1...	6...	
Eugene Li...	RE: Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:1...	2...	
Tabisa Pa...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:0...	6...	
Sydney M...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:0...	6...	
Koos Van ...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:0...	6...	
Nadine Va...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:0...	6...	
Neil Hend...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 07:0...	6...	
Bruce Titus	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 06:5...	6...	
Dorian So...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 06:5...	6...	
Eugene Li...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 06:5...	6...	
Khusta M...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 06:5...	6...	
Joseph Bu...	Masters questionnaire for Nokhuthala Hlongwana	Sun 2013/03/17 06:4...	6...	
Abongile ...	Accepted: Planning meeting for Civil Construction worksh...	Sun 2013/03/17 06:2...	9...	
Date: Last Week				
Raymond ...	RE: So_whats_the_future_of_paper_in_this_digital_world	Sat 2013/03/16 10:1...	2...	
Adithi Ro...	Weekly reports_Majuba and Tutuka Rail Projects	Sat 2013/03/16 10:1...	1...	
Mukheth...	RE: Water presentation	Sat 2013/03/16 10:0...	3...	

Items: 992 Reminders: 1 All folders are up to date. Updating address book. Connected to Microsoft Exchange 10%

March 2013

Su	Mo	Tu	We	Th	Fr	Sa
24	25	26	27	28	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

Today

Planning meeting for Civil C
10:00 AM - 4:00 PM
Majuba Rail Boardroom; At @

Tomorrow

Majuba Rail - Management f
10:00 AM - 12:00 PM
Majuba Rail Boardroom

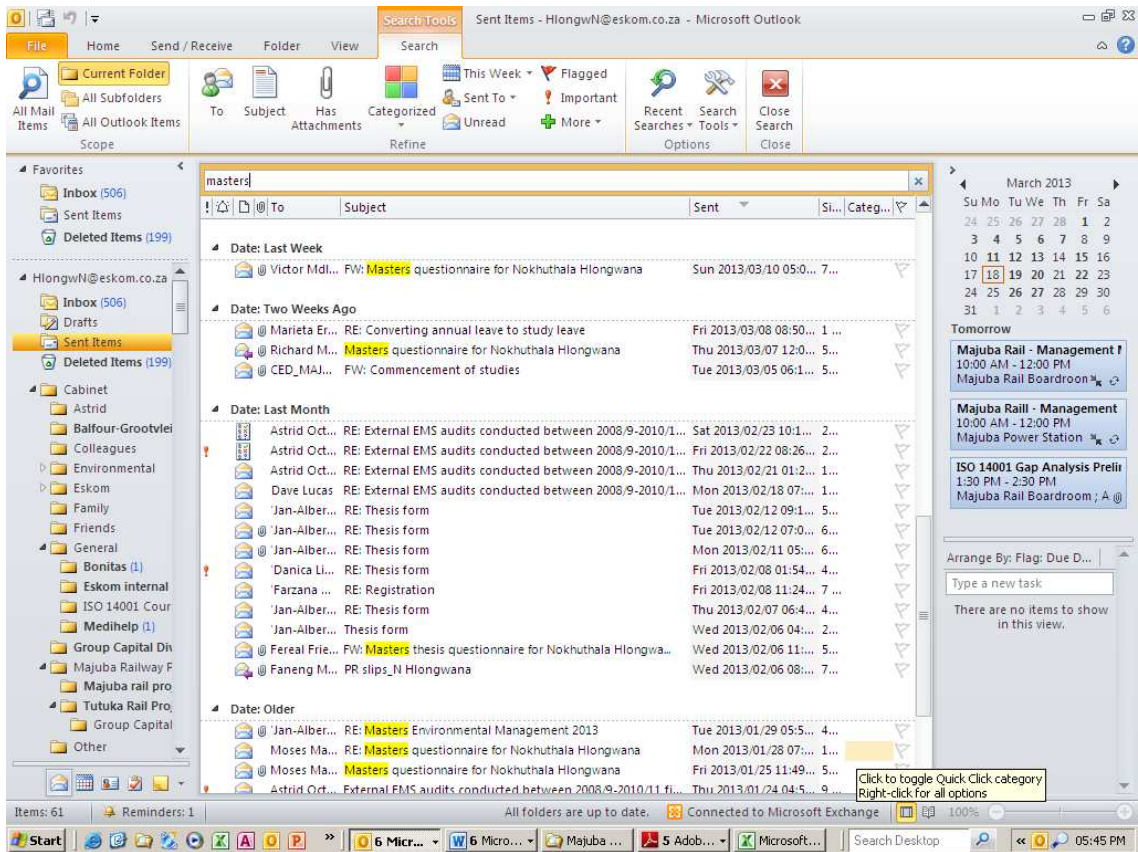
2 more appointments

Arrange By: Flag: Due D...

Type a new task

There are no items to show in this view.

Start | Sent Items - HL... | Document1 - Mic... | Search Desktop | 07:26 AM



Microsoft Outlook window: Sent Items - HlongwN@eskom.co.za

Search Results for "masters":

To	Subject	Sent	Size	Category
Astrid Oct...	RE: External EMS audits conducted between 2008/9-2010/1...	Sat 2013/02/23 10:1...	2...	
Astrid Oct...	RE: External EMS audits conducted between 2008/9-2010/1...	Fri 2013/02/22 08:26...	2...	
Astrid Oct...	RE: External EMS audits conducted between 2008/9-2010/1...	Thu 2013/02/21 01:2...	1...	
Dave Lucas	RE: External EMS audits conducted between 2008/9-2010/1...	Mon 2013/02/18 07:...	1...	
Jan-Alber...	RE: Thesis form	Tue 2013/02/12 09:1...	5...	
Jan-Alber...	RE: Thesis form	Tue 2013/02/12 07:0...	6...	
Jan-Alber...	RE: Thesis form	Mon 2013/02/11 05:...	6...	
Danica Li...	RE: Thesis form	Fri 2013/02/08 01:54...	4...	
Farzana ...	RE: Registration	Fri 2013/02/08 11:24...	7...	
Jan-Alber...	RE: Thesis form	Thu 2013/02/07 06:4...	4...	
Jan-Alber...	Thesis form	Wed 2013/02/06 04:...	2...	
Fereal Frie...	FW: Masters thesis questionnaire for Nokhuthala Hlongwa...	Wed 2013/02/06 11:...	5...	
Faneng M...	PR slips_N Hlongwana	Wed 2013/02/06 08:...	7...	

Additional search results (older):

- Jan-Alber... RE: Masters Environmental Management 2013 (Tue 2013/01/29 05:5: 4...)
- Moses Ma... RE: Masters questionnaire for Nokhuthala Hlongwana (Mon 2013/01/28 07: 1...)
- Moses Ma... Masters questionnaire for Nokhuthala Hlongwana (Fri 2013/01/25 11:49: 5...)
- Astrid Oct... External EMS audits conducted between 2008/9-2010/11 fi... (Thu 2013/01/24 04:5: 9...)
- Victor Mdl... Masters questionnaire for Nokhuthala Hlongwana (Thu 2013/01/24 04:2: 5...)
- Nolan Oc... Masters questionnaire for Nokhuthala Hlongwana (Thu 2013/01/24 04:1: 5...)
- Sipokazi P... Masters questionnaire for Nokhuthala Hlongwana (Thu 2013/01/24 04:1: 4...)
- Henrietta ... RE: Masters thesis questionnaire for Nokhuthala Hlongwana (Thu 2013/01/24 03:5: 1...)
- Henrietta ... Masters thesis questionnaire for Nokhuthala Hlongwana (Thu 2013/01/24 03:4: 5...)
- Farzana.h... 2013 Masters Registration forms for N Hlongwana, student... (Tue 2013/01/22 06:3: 9...)

Calendar view: March 2013

Tasks: Tomorrow

- Majuba Rail - Management 10:00 AM - 12:00 PM (Majuba Rail Boardroom)
- Majuba Rail - Management 10:00 AM - 12:00 PM (Majuba Power Station)
- ISO 14001 Gap Analysis Preli 1:30 PM - 2:30 PM (Majuba Rail Boardroom; A@)

Bottom status bar: Items: 61, Reminders: 1, All folders are up to date, Connected to Microsoft Exchange, 100%

Microsoft Outlook window: Sent Items - Archives - Microsoft Outlook

Search: master

From	Subject	Received	Size	Catego...
Date: Older				
Nokhuth...	FW: Exit Interview Form	Sun 2012/02/26 09:...	48...	
Nokhuth...	Thesis interview questionnaire_22 Jan. '12_Management...	Fri 2012/02/24 05:4...	45...	
Nokhuth...	RE: Rf, Greetings	Fri 2012/02/24 01:3...	33...	
Nokhuth...	FW: Exit Interview Form	Fri 2012/02/24 01:2...	49...	
Nokhuth...	FW: Exit Interview Form	Fri 2012/02/24 10:2...	51...	
Nokhuth...	FW: Books referred to by Prof Francois in the Masters last...	Thu 2012/02/23 01:...	13...	
Nokhuth...	A request to please participate in the assessment of the ...	Fri 2012/02/17 10:0...	51...	
Nokhuth...	RE: Charlene de Villiers - Standard Bank Financial Planner	Thu 2012/02/16 07:...	60...	
Nokhuth...	RE: Inquiry Form	Thu 2012/02/16 07:...	31...	
Nokhuth...	RE: Rf, Greetings	Thu 2012/02/16 05:...	24...	
Nokhuth...	RE: Charlene de Villiers - Standard Bank Financial Planner	Wed 2012/02/15 05:...	48...	
Nokhuth...	A request to please participate in the assessment of the ...	Wed 2012/02/15 11:...	51...	
Nokhuth...	RE: Exit Interview Form	Wed 2012/02/15 11:...	44...	
Nokhuth...	Books referred to by Prof Francois in the Masters last con...	Fri 2012/02/10 08:3...	9 KB	
Nokhuth...	RE:	Wed 2012/02/08 04:...	8 KB	
Nokhuth...	Articles re: gaps, more clarity and interpretation required ...	Mon 2012/02/06 06:10 PM		
Nokhuth...	A request to please participate in the assessment of the ...	Wed 2012/02/01 10:...	27...	
Nokhuth...	RE:	Wed 2012/02/01 10:...	8 KB	
Nokhuth...	FW: A request to please participate in the assessment of f...	Wed 2012/02/01 08:...	32...	
Nokhuth...	RE:	Wed 2012/02/01 08:...	43...	
Nokhuth...	A request to please participate in the assessment of the ...	Tue 2012/01/31 09:...	27...	
Nokhuth...	A request to please participate in the assessment of the ...	Tue 2012/01/31 09:...	27...	
Nokhuth...	A request to please participate in the assessment of the ...	Tue 2012/01/31 09:...	27...	
Nokhuth...	A request to please participate in the assessment of the ...	Tue 2012/01/31 09:...	27...	
Nokhuth...	A request to please participate in the assessment of the ...	Tue 2012/01/31 09:...	27...	
Nokhuth...	A request to please participate in the assessment of the ...	Tue 2012/01/31 09:...	27...	
Nokhuth...	A request to please participate in the assessment of the ...	Tue 2012/01/31 09:...	27...	

Calendar: March 2013

Tasks: Tomorrow

- Majuba Rail - Management 10:00 AM - 12:00 PM
- Majuba Rail Boardroom
- Majuba Rail - Management 10:00 AM - 12:00 PM
- Majuba Power Station
- ISO 14001 Gap Analysis Preli 1:30 PM - 2:30 PM
- Majuba Rail Boardroom; A @

Items: 40 Reminders: 1

Sent Items - Archives - Microsoft Outlook

File Home Send / Receive Folder View Search

New E-mail New Items Ignore Clean Up Delete Reply Reply All Forward Meeting Reply & Delete To Manager Done Rules Move Unread / Read Categorize Find a Contact Address Book Filter E-mail

request

Your search returned a large number of results. Narrow your search, or click here to view all results.

From	Subject	Received	Size	Categ...
Nokhuth...	RE: PERFORMANCE CONTRACT	Thu 2012/11/29 03:10...	11...	
Nokhuth...	RE: 329-989443_2013 new medical aid application	Thu 2012/11/29 12:46...	53...	
Nokhuth...	RE: PERFORMANCE CONTRACT	Wed 2012/11/28 05:5...	10...	
Nokhuth...	RE: Fax Received From (0177123766)	Wed 2012/11/28 05:1...	19...	
Nokhuth...	RE: PERFORMANCE CONTRACT	Wed 2012/11/28 10:5...	97...	
Nokhuth...	RE: Medical aid application_2013	Wed 2012/11/28 10:2...	38...	
Nokhuth...	FW: Medical aid application_2013	Tue 2012/11/27 08:39...	4 ...	
Nokhuth...	RE: Input into Biodiversity 'Zero Harm' Article	Mon 2012/11/26 05:5...	18...	
Nokhuth...	RE: cancellation of medical aid	Mon 2012/11/26 05:2...	40...	
Nokhuth...	Medical aid application_2013	Mon 2012/11/26 05:1...	4 ...	
Nokhuth...	RE: PERFORMANCE CONTRACT	Mon 2012/11/26 04:0...	22...	
Nokhuth...	FW: Contact details at DMR re: borrow-pits issues	Mon 2012/11/26 03:3...	16...	
Nokhuth...	RE: ESKOM MACHUBA POWER STATION <#ENVQ10795>	Thu 2012/11/22 05:25...	10...	
Nokhuth...	RE: Rainy Season Preparedness Checklist	Thu 2012/11/22 02:54...	48...	
Nokhuth...	RE: ECO Motivation	Thu 2012/11/22 09:49...	26...	
Nokhuth...	RE: A request to please participate in my Masters Degree i...	Thu 2012/11/22 08:34...	21...	
Nokhuth...	FW: A request to please participate in my Masters Degree ...	Tue 2012/11/20 06:58...	14...	
Nokhuth...	RE: ECO Motivation	Tue 2012/11/20 03:25...	32...	
Nokhuth...	RE: ECO Motivation	Tue 2012/11/20 03:23...	28...	
Nokhuth...	RE: ECO Motivation	Tue 2012/11/20 03:20...	23...	
Nokhuth...	RE: ECO Motivation	Tue 2012/11/20 03:19...	23...	
Nokhuth...	FW: Camden Sol line lift project.	Tue 2012/11/20 02:22...	54...	
Nokhuth...	FW: Supervision Mission for Nov/Dec 2012	Tue 2012/11/20 02:16...	70...	
Nokhuth...	RE: co-ordinates, ECO appointment letter & DEA construc...	Tue 2012/11/20 07:45...	38...	
Nokhuth...	RE: DRAFT Contract KICK OFF Procedure (2).doc	Mon 2012/11/19 06:5...	13...	
Nokhuth...	RE: Rainy Season Preparedness Checklist	Mon 2012/11/19 06:3...	43...	
Nokhuth...	RE: Rainy Season Preparedness Checklist	Mon 2012/11/19 06:3...	43...	
Nokhuth...	RE: Green Economy Survey 2012	Mon 2012/11/19 06:2...	31...	

March 2013

Su Mo Tu We Th Fr Sa

24 25 26 27 28 1 2

3 4 5 6 7 8 9

10 11 12 13 14 15 16

17 18 19 20 21 22 23

24 25 26 27 28 29 30

31 1 2 3 4 5 6

Tomorrow

Majuba Rail - Management
10:00 AM - 12:00 PM
Majuba Rail Boardroom

Majuba Rail - Management
10:00 AM - 12:00 PM
Majuba Power Station

ISO 14001 Gap Analysis Preli
1:30 PM - 2:30 PM
Majuba Rail Boardroom ; A @

Arrange By: Flag: Due D...

Type a new task

There are no items to show in this view.

Items: 200 Reminders: 1

Start 8 Micro... 6 Micros... Majuba W... 6 Adobe... Microsoft ... Search Desktop 06:00 PM

Microsoft Outlook - Sent Items - Archives - Microsoft Outlook

File Home Send / Receive Folder View Search

Ignore Clean Up Delete Reply Reply All Forward Meeting

Majuba rail proj... To Manager Move Unread / Read Find a Contact

Team E-mail Done Rules Categorize Address Book

Reply & Delete Create New OneNote Follow Up Tags Filter E-mail

Quick Steps Move Move Follow Up Find

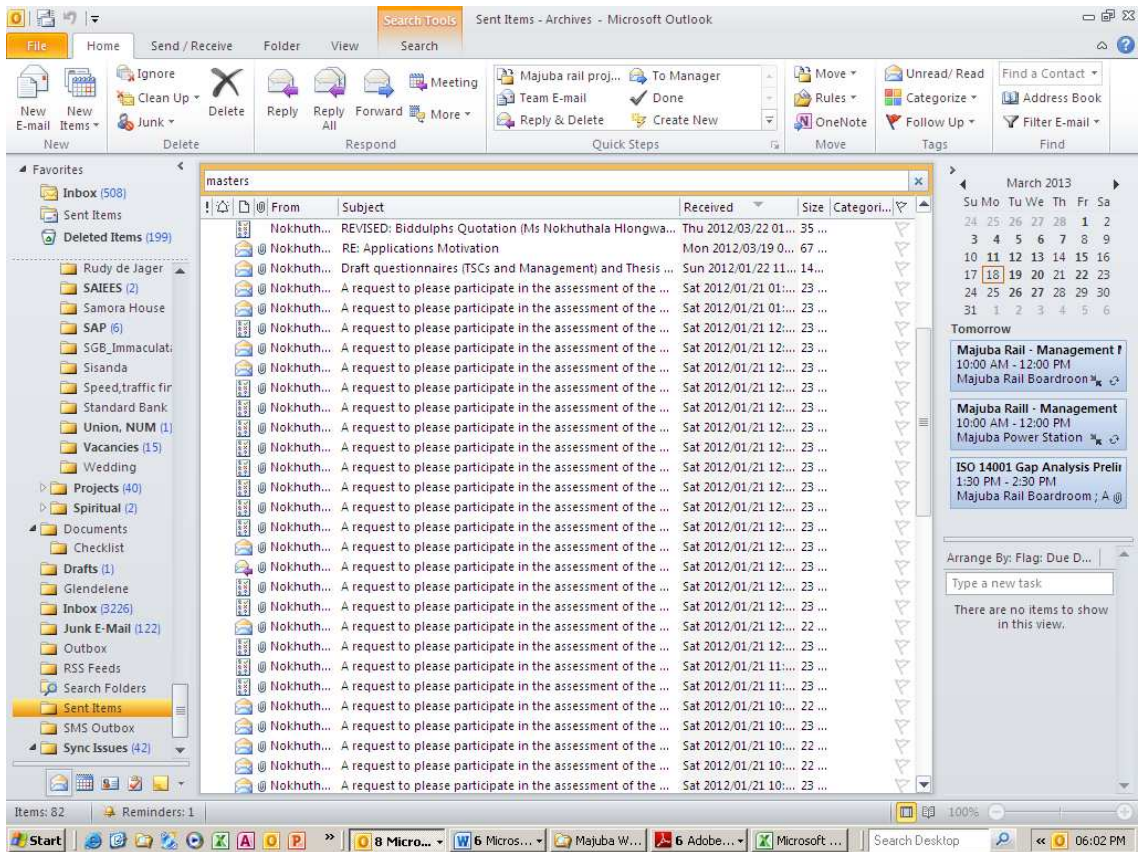
request

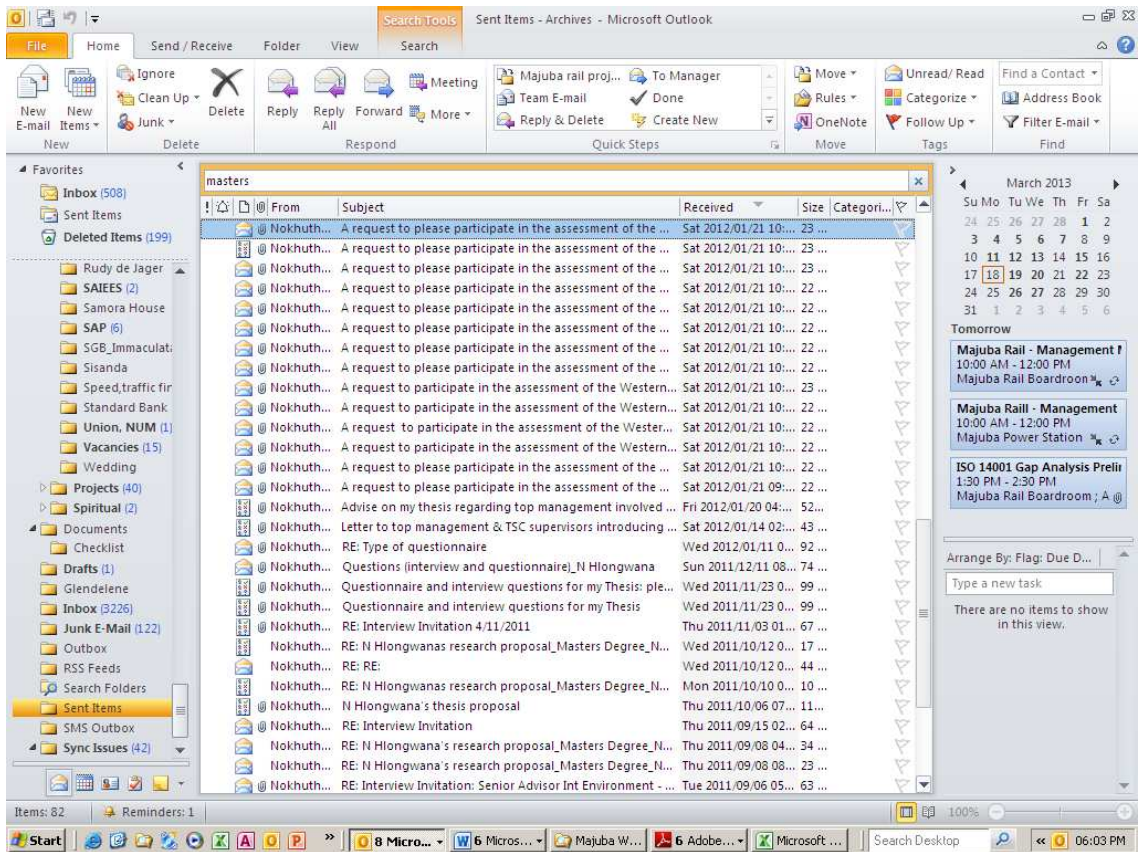
Your search returned a large number of results. Narrow your search, or click here to view all results.

From	Subject	Received	Size	Categ...
@ Nokhuth...	FW: co-ordinates, ECO appointment letter & DEA constru...	Mon 2012/11/19 03:5...	88...	
Nokhuth...	RE: co-ordinates, ECO appointment letter & DEA construc...	Mon 2012/11/19 03:5...	34...	
Nokhuth...	RE: A request to please participate in my Masters Degree i...	Mon 2012/11/19 03:5...	29...	
Nokhuth...	RE: A request to please participate in my Masters Degree i...	Mon 2012/11/19 03:4...	24...	
@ Nokhuth...	RE: A request to please participate in my Masters Degree i...	Mon 2012/11/19 03:3...	61...	
Nokhuth...	RE: Rainy Season Preparedness Checklist	Mon 2012/11/19 03:1...	39...	
Nokhuth...	RE: appointment	Mon 2012/11/19 03:0...	18...	
Nokhuth...	RE: appointment	Mon 2012/11/19 08:3...	12...	
Nokhuth...	RE: co-ordinates, ECO appointment letter & DEA construc...	Fri 2012/11/16 12:42 ...	32...	
Nokhuth...	RE: incidents register.xls_Tutuka	Fri 2012/11/16 10:31 ...	24...	
@ Nokhuth...	RE: Perway bidding document: SHE specifications	Fri 2012/11/16 09:32 ...	33...	
@ Nokhuth...	RE: A request to please participate in my Masters Degree i...	Thu 2012/11/15 06:13...	63...	
@ Nokhuth...	FW: Mpumalanga e- brief (waste Management)	Thu 2012/11/15 06:08...	5 ...	
@ Nokhuth...	FW: Justine Nov2012	Thu 2012/11/15 05:04...	4 ...	
@ Nokhuth...	FW: Justine Nov2012	Thu 2012/11/15 05:04...	3 ...	
@ Nokhuth...	FW: Justine Nov2012	Thu 2012/11/15 05:04...	2 ...	
@ Nokhuth...	FW: Justine Nov2012	Thu 2012/11/15 05:03...	4 ...	
@ Nokhuth...	FW: Justine Nov2012	Thu 2012/11/15 05:03...	3 ...	
@ Nokhuth...	RE: Borrowwipit consent letters	Thu 2012/11/15 05:01...	25...	
Nokhuth...	RE: Tutuka Rail Phase 2 CRA, DRA and ERA (EMP)	Thu 2012/11/15 04:00...	41...	
@ Nokhuth...	RE: A request to please participate in my Masters Degree i...	Thu 2012/11/15 08:01...	58...	
Nokhuth...	A request to please participate in my Masters Degree in E...	Wed 2012/11/14 05:5...	38...	
Nokhuth...	RE: Tutuka Rail Phase 2 CRA, DRA and ERA (EMP)	Wed 2012/11/14 05:0...	33...	
@ Nokhuth...	Scope of works_water sampling and monitoring	Wed 2012/11/14 01:1...	14...	
@ Nokhuth...	RE: Tutuka Rail Phase 2 CRA, DRA and ERA (EMP)	Wed 2012/11/14 01:0...	14...	
Nokhuth...	RE: 23157674 Hlongwana ND	Wed 2012/11/14 09:5...	25...	
@ Nokhuth...	FW: Tutuka Rail Phase 2 CRA, DRA and ERA (EMP)	Wed 2012/11/14 09:0...	16...	
Nokhuth...	RE: Report	Wed 2012/11/14 07:3...	34...	

Items: 200 Reminders: 1

Start | 8 Micro... | 6 Micro... | Majuba W... | 6 Adobe... | Microsoft ... | Search Desktop | 06:00 PM

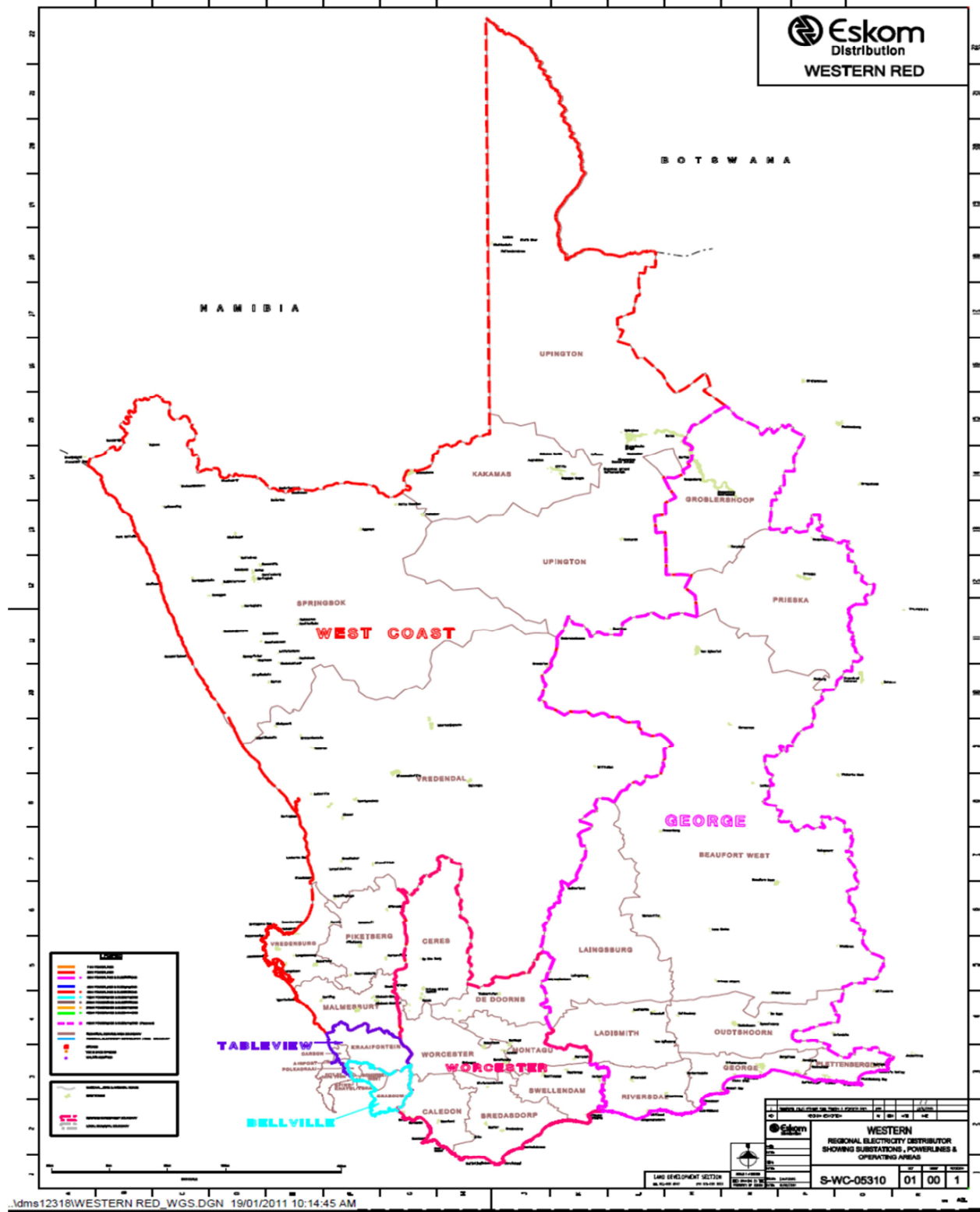




**ANNEXURE 3: THE LIST AND GEOGRAPHICAL LOCATION (MAP) OF THE TSCs
FOR ESKOM DISTRIBUTION: WESTERN REGION**

TSCs LIST:

NO	FIELD SERVICE CENTRE AND TSC
KHAYELITSHA FIELD SERVICE CENTRE	
1.	Spine
2.	Khayelitsha
TABLE VIEW FIELD SERVICE CENTRE	
1.	Airport
2.	Kraaifontein
3.	Carbon
4.	HV Urban
WEST COAST FIELD SERVICE CENTRE	
1.	Malmesbury
2.	Piketberg
3.	Vredenburg
4.	Vredendal
5.	Springbok
6.	Upington
7.	Kakamas
8.	Upington Minor Works
BELLVILLE FIELD SERVICE CENTRE	
1.	Polkadraai
2.	Somerset West
3.	Grabouw
GEORGE FIELD SERVICE CENTRE	
1.	George
2.	Oudtshoorn
3.	Beaufort West
4.	Plettenberg Bay
5.	Riversdal
6.	Swellendam
7.	Ladysmith
8.	Prieska
9.	Groblershoop
WORCESTER FIELD SERVICE CENTRE	
1.	Worcester
2.	Montague
3.	Bredasdorp
4.	Caledon
5.	De Doorns
6.	Laingsburg
7.	Ceres



ANNEXURE 4: A FULL LIST OF QUESTIONS, RESPONSES AND INTERPRETATION (SHEQ MANAGEMENT)

QUESTION NUMBER	QUESTIONS	CODE	MANAGEMENT RESPONSE	ANALYSIS AND INTERPRETATION OF DATA
1.	Have you participated in the EMS management reviews before?	M1	No	Both M1 and M13 claim that they have not participated in the EMS Management reviews, M18 and M19 have participated. However, M16 and M22 have not answered the question.
		M13	No	
		M16	Blank	
		M18	Yes	
		M19	Yes	
		M22	Blank	
2.	If so, what financial years?	M1	N/A	Both M1 and M13 have claimed not to have participated in the EMS Management reviews, as such, the response on this question is not applicable. However, as much as both M18 and M19 responded with a positive answer on question 1, only M19 gave a number of years she/he has

				been participating in the EMS management reviews. M18 did not answer the question. On the other hand, M16 and M22 did not respond on question 1, but on the follow-up question of question 1 they both mentioned that they have been attending EMS management reviews since 2009.
		M13	N/A	
		M16	2009	
		M18	Blank	
		M19	The last five financial years	
		M22	2009	
3.	What is your expectation from the outcome of such a management review?	M1	To look at effectiveness of our EMS, to make recommendations where required.	The response for M13 continues to be not applicable, hence she/he has not attended any EMS management reviews. Interestingly, as much as M1 has also not attended any EMS management reviews, she/he has given hers/his expectation from the outcome of management reviews, and her/his expectation are that

management reviews must look at effectiveness of Eskom Distribution: Western Region's EMS and make recommendations where required. Both M16 and M22 expect the Eskom Distribution: Western Region's EMS management reviews to bring-in continual improvement on programmes and current practices. M22 further, states that the EMS management reviews should also empower the employees, specifically those involved with execution of the projects (i.e., those involved with construction). It must be noted that construction has been identified as the major contributor of environmental impact within Eskom Distribution. It is interesting to know that some participants of this study know the connection of the EMS management reviews and activities of the organization, whereby, continual improvement must be seen, particularly, effectiveness of the EMS to be reviewed,

				<p>improvement in current practices, matters that require actions to be addressed, risks to be elevated and have construction team empowered to minimize negative environmental impacts. Interestingly, all these expectations relate on the PDCA Cycle (Plan, Do, Check, Act) which has been adopted by the ISO 14001 Standard. This shows that as much as the participants have not spelled out the PDCA Cycle, but they are aware that the EMS management review is part of the Cycle. On the other hand, M18 expects feedback from the EMS management review. Thus, decisions, must not sit with the SHEQ Management, but must be cascaded to the relevant employees who are directly involved with execution. This is also an interesting response, hence, the employees who do execution do not attend EMS management reviews.</p>
		M13	N/A	
		M16	Continual improvement	

			programmes for EMS.	
		M18	Feedback on final result.	
		M19	Matters which require decisions and actions are addressed; future plans are confirmed and risks elevated.	
		M22	Improvement in current practices. Efficiency of teams and during execution.	
4.	Do you know if the management reviews recommendations were implemented?	M1	Don't know	Both M1 and M13 stated that they have not attended any EMS management reviews, and as such, their response for this question is that they do not know if the management reviews recommendations were implemented. Feedback on the management reviews is vital as depicted by M18 on question 3 above. M16 did not answer this question. This is difficult to determine if it was left on purpose or omitted by mistake, hence she/he has been attending the management reviews

				<p>since 2009. However, M18, 19 and 22 have given a positive response to this question. One will wonder how M18, 19 and 22 know if management reviews recommendations are implemented. The response to this question is found on the answers given by them on questions 5, 14 and 16 where they all agree that management reviews address significant aspects and improvement is already visible due to Laws which are imposed on Eskom, better work management and improved contractor management; Good performance against the targets; Improvement due to tight monitoring and clear requirements are in place and that trend analysis can be established and incidents are fully investigated. The exception is M22 on question 5 below, who did not answer the question.</p>
		M13	Don't know	
		M16	Blank	

		M18	Yes	
		M19	Yes	
		M22	Yes	
5.	If yes, how do you know?	M1	We track recommendations monthly.	Both M1 and M16's responses are that management reviews recommendations are tracked. These responses further point to the PDCA Cycle, specifically, 'Check'. M19 view recommendations of the management reviews through the feedback that is provided by the Senior Environmental Advisor during the SHEQ meetings. SHEQ meetings are mostly done every months, which also support the response of M1 and M16 above. M18 stated that there are processes that are put in place to make sure that management reviews recommendations are implemented, and one will assume that one of the processes is the monthly SHEQ meetings. M22 did not respond here and it is not easy to determine the

				reason.
		M13	N/A	
		M16	Yes, tracked as part of our SHEQ committee.	
		M18	Process was put in place.	
		M19	The environmental senior advisor provides feedback at the SHEQ meeting on the agreed actions/activities.	
		M22	Blank	
6.	What measures are in place to make sure that such recommendations are implemented within reasonable time-frames?	M1	Tracking monthly with reports	M1 and M16 have given same responses as on question 5 above. M18 mentioned on question 5 above that there are processes that are put in place to check is management reviews recommendations are implemented. On question 6, M18 has elaborated on her/his response on question 5 above and that one of the processes put in place are the KPIs (Key Performance Indicator) per recommendation. Thus, management

				<p>review recommendations are not only implemented through the monthly SHEQ meetings, but also KPIs that are attached to each recommendation. M19's response could also relate to M1 and M16 as she/he states that the measures that are in place are in the form of deadlines and timeframes that are agreed up front. M22 states that measures that are in place to make sure that such recommendations are implemented within reasonable timeframes are through feedback reports to the relevant stakeholders (Risk Management). It is important to note that Risk Management also forms part of the SHEQ Committee as well as the EMS management review committee. Therefore, their representation in such forums helps in being part of the solution/s.</p>
		M13	N/A	
		M16	Yes, tracked as part of our SHEQ committee.	

		M18	K.P.I. per recommendation.	
		M19	Deadlines and timeframes are agreed up front.	
		M22	Feedback reports to the relevant stakeholders (Risk Management)	
7.	According to your own view, what is the aim of management review?	M1	To look at effectiveness of our EMS, to make recommendations where required.	This question was asked to check if the responses given on question 3 above will be repeated as it is the same question but asked differently. Interestingly, the responses given on this question are more or less the same as the responses given on question 3 above. Therefore, this proves that there is consistence in the response given by the participants, and mostly, they apply their minds and understand the meaning of each question.
		M13	Blank	
		M16	To review effectiveness of current EMS programmes and to propose new ones for	

			continual improvement.	
		M18	To streamline systems & operations.	
		M19	To understand the risks in the business and put controls and treatment plans in place to address them.	
		M22	To improve operations and ensure that mistakes are not repeated.	
8.	Does the aim bring about results?	M1	Yes	Only M1 and M19 responded positive for this question, with only M18 who does not know. The other three did not respond at all. However, it must be noted that M13 stated on the first question that she/he has not attended any EMS management reviews before. It might be that the aim as of question 7 above does not seem to be 100% met. However, it is believed that the few participants give a through reflection of the management reviews with Eskom

				Distribution: Western Region.
		M13	Blank	
		M16	Blank	
		M18	Don't know	
		M19	Yes	
		M22	Blank	
9.	If so, what are the results?	M1	Improved process, Gap analysis.	Interestingly, as much as question 8 did not receive a positive response, this question proves the opposite. It seems as if the aim of management review brings results. Not counting M13, four results have been obtained, with the exception of M18 who did not respond and M22 who stated that the results are normally observed over time (which is true as some results can only be observed after a long time). M1, 16 and 22 all observe an improvement (continual improvement as per the ISO 14001 requirement). The improvement is in the form of processes,

				Gap analysis, increased environmental awareness, risks are addressed and programmes are agreed upon. One will assume that the programmes are agreed upon to make sure that whatever shortfalls that have been identified are closed on time. The closing of shortfalls/incidents support the PDCA Cycle, specifically the 'Act' part of it.
		M13	Blank	
		M16	Yes, more environmental awareness.	
		M18	Blank	
		M19	Risks are addressed, awareness is created, programmes are agreed upon.	
		M22	Results are normally observed over time.	
10.	According to your own view what is the importance of having a company/division	M1	It creates an International Standard against which we can benchmark, improves processes	M1, 19 and 22 view the importance of a company being ISO 14001 certified in a way that brings improvement in the

	ISO 14001: 2004 certified?		and ultimately quality and performance.	company's processes, improved quality, operation (the way of doing things), risks are treated and as a result, performance improvement. Continual improvement, which is one of the ISO 14001 elements, is also noted here by these participants. Both M1 and M18 view ISO 14001 certification in a way where the company adopts or applies international standards on its activities, which also relate to quality improvement. M16 and M18 also align ISO 14001 certification with international standards. M16 further states that that certification assist an organization to achieve compliance to legislation and ensure commitment of management and employees as the company makes its employees aware of its objectives.
		M13	Blank	
		M16	Structured management system in order to achieve compliance to legislation and keep abreast of international standards and	

			ensure management and staff commitment through awareness of company objectives.	
		M18	To have standard approaches towards the same outputs.	
		M19	For continual business improvement and to ensure that risks are treated.	
		M22	This will improve operations, quality, ensure that there are compliances and is needed within Eskom.	
11.	How is it decided on how to include EMS elements?	M1	Unless specifically described in scope but also part of SHEQ drive.	M1 and M19 believe that EMS elements are decided by the SHEQ Committee, whilst M16 is not sure. However, M18 has not really answered the question as expected, but noted that environment is entangled on the company's operations and as a result is important. M22 believed that EMS elements are determined by the legislation requirements as well as the

				business activities. Business activities do determine the aspects and impacts the organization has on the environment.
		M13	Blank	
		M16	Not sure	
		M18	The environment forms part of our Micro and Macro operations and should be included.	
		M19	Via the SHEQ committee.	
		M22	It is normally driven by legislation requirements and company stance.	
12.	What do you consider as the key significant aspects within Minor Engineering Works and Major Engineering Works (MEW) and TSCs?			
	Minor Engineering Works	M1	Awareness, interventions, training.	M1, 19 and 22 believe some key significant aspects within Minor Engineering Works are awareness and

training. It seems as if in their understanding, these are the requirements for Minor Engineering Works. However, M16's views are that vegetation management, oil spills and waste are currently affecting Minor Engineering Works. Whilst M18 believes the key aspects here are in the form of digging of holes (for the structure foundations) and trimming of trees. M19 on the other hand, further views compliance to environmental legislation as a significant aspect. Thus, without compliance to the environmental legislation, the KPI's will drop and possible, the continual improvement through EMS management review will be meaningless. M22 further notes the need for the training in terms of EMS; cultural changes and that communication needs to be improved. Cultural changes have various meanings, however, in this case it might mean a culture of wanting to learn even if it is something you think it is not in

				your field as ISO 14001 is generally viewed to be implemented by the Environmental Practitioners. Training in the EMS and improved communication will assist in changing the culture of thinking ISO 14001 can only be implemented by the Environmental Practitioners.
		M13	Blank	
		M16	Vegetation management, oil spills, waste.	
		M18	Medium disturbance of environment (digging of holes, trimming of trees, etc.).	
		M19	Awareness training, Compliance to environmental legislation.	
		M22	Training in terms of EMS; cultural changes are required; create awareness; communication needs to be improved.	
	Major Engineering Works	M1	During interventions we adhere	The responses for Major Engineering

			to EMPs, report incidents, EIA's are in place, training.	Works are similar to the Minor Engineering Works in the sense that both departments do more or less the same work with a difference in the size of the kilovolts. However, M1 has added EMPs, people and EIA to be in place.
		M13	Blank	
		M16	Oil spills, waste	
		M18	Major Environment disturbance. Erecting of large pylons etc.	
		M19	Awareness training, Compliance to environmental legislation.	
		M22	Training, communication and culture.	
	TSCs	M1	Awareness, reporting, training	The responses for the TSCs are also similar to the Minor Engineering Works. Some of the work done by the TSCs is similar to the one done by Minor Engineering Works. The only difference is that TSCs own the assets whilst Minor Engineering does not (it operates like a

				Contractor).
		M13	Blank	
		M16	Vegetation management, oil spills, waste management	
		M18	Little Disturbance. Mainly possibilities of oil spills	
		M19	Awareness training, Compliance to environmental legislation	
		M22	Culture, training and communication	
13.	Do you think management reviews address major significant aspects?	M1	Yes	None of the participants gave a negative response for this question. Four out of six participants responded with a 'yes', M19 did not know, whilst M13 claimed to have never participated in the management reviews. With this positive response (even though I received a low response rate for the questionnaires), I will assume that management reviews address major significant aspects within Eskom Distribution: Western Region.

		M13	Blank	
		M16	Yes	
		M18	Yes	
		M19	Don't know	
		M22	Yes	
14.	If yes, how?			
	Minor Engineering Works	M1	Change in behavior, greater awareness.	Participants believe management reviews address major significant aspects in the form of change of the employees' behavior (the way of doing things/work), bridging the gaps within aspects, continual improvement in the programmes and other areas, regular audits as compared to previously and new risks can be identified.
		M13	Blank	
		M16	Address shortfalls in managing aspects and recommend improvement by reviewing current programmes.	
		M18	Regular Audits	
		M19	N/A	

		M22	It can identify areas where there needs to be improvement, development matters can be identified.	
	Major Engineering Works	M1	Change in behavior, greater awareness.	Similar responses as of the Minor Engineering Works.
		M13	Blank	
		M16	Address shortfalls in managing aspects and recommend improvement by reviewing current programmes.	
		M18	Regular Audits on ESKOM and Construction.	
		M19	N/A	
		M22	The training requirements can then be determined if staff are sufficiently trained.	
	TSCs	M1	Change in behavior, greater awareness.	Similar responses as of the Minor Engineering Works, except on M22 where she/he refers to staff training. Staff training

				is vital as it could empower the employees to contribute to the effectiveness of the management reviews and ISO 14001 continual improvement within Eskom Distribution: Western Region.
		M13	Blank	
		M16	Address shortfalls in managing aspects and recommend improvement by reviewing current programmes.	
		M18	Regular Audits on Minor Construction.	
		M19	N/A	
		M22	Reviews can determine if this is a priority within a CNC (TSC), and that staff are fully trained.	
15.	If no, how and how can they improve?	M1	N/A	No response has been given for this question. This could be because participants believe management reviews address major significant aspects within the region.

		M13	Blank	
		M16	N/A	
		M18	N/A	
		M19	Blank	
		M22	N/A	
16.	Have you seen an improvement or a decline in environmental performance within the region and why do you say so?	M1	The level of awareness and reporting is better. Contraventions have reduced.	All the participants who responded on this question have positively seen an improvement in the environmental performance within Eskom Distribution: Western Region. The improvement range in the form of awareness and reporting, reduction in legal contraventions, participation in environmental interventions e.g. recycling program (which coincide with the reduce, recycle initiative and ISO 14001 objectives to reduce waste), work managed better, improved Contractor management (Distribution powerlines and substations are mostly constructed by Contractors), good performance against targets, strict monitoring/audits,

				requirements communicated clearly to those affected and incidents are fully investigated. With such positive response on this question and questions 7, 9, 13 and 14 (even though the response rate was low), one can proudly state that management reviews within Eskom Distribution: Western Region are effective and do bring about continual improvement.
		M13	Blank	
		M16	Improvement in terms of legal compliance, less legal contraventions. More environmental awareness from staff. Participation in environmental interventions e.g. recycling program	
		M18	Definitely and improvement due to Laws which are imposed on ESKOM, better work management and improved contractor management.	

		M19	Good performance against the targets.	
		M22	Improvement due to tight monitoring and clear requirements are in place. Trend analysis can be established and incidents are fully investigated.	

ANNEXURE 5: A FULL LIST OF QUESTIONS, RESPONSES AND INTERPRETATION (TSCs SENIOR SUPERVISORS)

QUESTION NUMBER	QUESTIONS	CODE	TSCs SENIOR SUPERVISORS' RESPONSE	ANALYSIS AND INTERPRETATION OF DATA
1.	What is your role in the Environmental Management System (EMS), ISO 14001: 2004?	TSC2	I am responsible for Monwabisi CNC and making sure that clean and healthy environmental management is adhered to with this Eskom site. Ensure that CNC comply with environmental standard through audit process.	<p>In summary, all the participants are responsible for implementing Eskom environmental Policies, Standards and Procedures; making sure that they clean-up whatever impact they have imposed on the environment; ensure protection of the environment, which is linked to the compliance with the relevant legislation/s. TSC9 further states that she/he is responsible for the reporting on safety, health and environmental matters to various stakeholders. Thus, reporting does not only end in her/his TSC, but it must also be done to other stakeholders who would possible take further actions in order to mitigate environmental impacts/risks.</p> <p>TSCs 11 and 14 on the other hand, further state that they make sure that ISO 14001 requirements are also infiltrated to the staff members of their TSCs. TSC14 further ensures that environmental responsibilities are communicated and assigned and further monitor and ensure KPI's are met. It must be noted that meeting KPIs is one of the measurement that would determine if the Eskom Distribution: Western Region's management review is effective</p>

				and bring about continual improvement.
		TSC3	Work in conjunction with the EMS to ensure the environment is protected.	
		TSC9	I am responsible for the operations at our unit, Mew Upington where I am tasked to ensure that we implement all the Eskom and legislative requirements associated with environmental matters. This means putting systems and mitigating measures in place where our business adversely affects the environment and safety and health of our staff. I am further responsible to report on safety, health and environmental matters to various stakeholders.	
		TSC10	My role is to report environmental incidents to the Department of Labour and Risk department as they occur in my area of responsibility. Clean up any/mop up any oil spillages. Report any Wild Life incidents, protect indigenous trees, plants.	
		TSC11	I ensure that the staff adheres to ISO 14001 in preventing the environmental degradation by managing disposal of all the scrap materials, regular good and quick cleaning of Oil spill, proper disposal of all waste in the Somerset West CNC.	

		TSC14	To ensure all environmental issues are being addressed to ensure that environmental responsibilities are communicated and assigned. To monitor and ensure KPI's are met. To ensure that my staff complies to National Environmental Management Act and associated legislation.	
		TSC15	I am appointed as the Environmental Responsible person at my Worksite {Prieska NCOU} by my Manager. I see that our business unit complies to the SHEQ / OHS Act.	
		TSC17	I must manage that my area work according to environmental legislation and that we follow right process if something goes wrong.	
2.	Have your Field Services Centre Manager participated in the EMS management reviews?	TSC2	Yes	TSCs2, 10, 11, 15 and 17 have indicated that their Field Services Centre Managers have participated in the EMS management reviews, with the exception of TSC3 who did not know, TSC14 who claimed that hers/his has not participated in the EMS management reviews, and TSC9 who did not give a straight answer, saying she/he believes her/her Field Services Centre Manager participated in the EMS management reviews. It is interesting to know that TSC9 believes her Field Services Centre Manager has participated in the EMS management reviews,

				meaning, she/he expect her/his manager to attend such management reviews.
		TSC3	Don't know	
		TSC9	I believe so	
		TSC10	Yes	
		TSC11	Yes	
		TSC14	No	
		TSC15	Yes	
		TSC17	Yes	
3.	What is your expectation from the outcome of such management reviews?	TSC2	We had review environment exposure and wrote mitigation factor the case of environmental exposure. Look at new risks that have been identified from previous incidents and transgressions or base on new legislation.	<p>TSCs2, 9 and 17 expect that management reviews should assist them in making sure that they comply with the relevant legislation. It must be noted that ISO 14001 implementation assist in compliance with the relevant legislation, for example avoid and/or mitigate pollution.</p> <p>TSC3's expectations are that the management reviews must improve the EMS System. This is interesting as one of the management review's objectives is to bring continual improvement onto the EMS System. Therefore, TSC3's expectation ties-up with the EMS continual improvement requirement.</p> <p>TSCs10, 14 and 15 expect that management reviews should guide on the implementation of changes/developments and recommendations. This is also interesting as it ties-up with one of the management reviews' requirements; the</p>

			<p>one of improving on what is working and removing what is not working for the System.</p> <p>TSCs11 and 15 further state that recommendations should be implemented to prevent recurring incidents and preventative measures should be implemented to prevent any environmental damage. Check and Act principles of the PDCA Cycle are being noted here by TSCs11 and 15. TSC 11 specifically expects management review not only to guide regarding non-conformance to ISO 14001, but to come up with disciplinary measures that will ensure a 'Zero tolerance in violating the ISO 14001 Standards. It is interesting to note that 'Zero Environmental Harm' is one of Eskom's 'Life Saving Rules' formerly known as 'Cardinal Rules'. TSC17 also applies the 'Act' principle as she/he states that one must stay on the right track.</p>
		TSC3	To improve the EMS.
		TSC9	From such reviews I expect to get feedback informing me whether we are complying to all legal and company rules and regulations on matters pertaining to the environment, safety and health.
		TSC10	That any developments are communicated with us as they unfold.
		TSC11	To give direction to any incident that

			led to the non-adherence of the ISO 14001 and to come up with disciplinary procedures or techniques in ensuring the Zero tolerance in violating the ISO 14001 standard.	
		TSC14	Implement changes.	
		TSC15	Out of such a review recommendations should be implemented to prevent recurring incidents as well as preventative measures should be implemented to prevent any Environmental damage.	
		TSC17	To perform with legislation and to stay on the right track.	
4.	Do you know if the management reviews recommendations were implemented?	TSC2	Yes	Five of the participants responded positive on this question, and they are TSCs2, 9, 10, 14 and 17. However, TSCs3, 11 and 15 did not know if the management reviews recommendations were implemented. It is interesting to note the trend with TSC3 as she/he did not know if her/his Field Services Centre Manager participated in the EMS management reviews. Supposedly, there was no feedback regarding management review/s by her/his Field Service Manager.
		TSC3	Don't know	
		TSC9	Yes	
		TSC10	Yes	

		TSC11	I do not know	
		TSC14	Yes	
		TSC15	Don't know	
		TSC17	Yes	
5.	If yes, how do you know?	TSC2	When an environmental incident occurs, a flash report is sent and case study is drawn up with recommendations that have to be implemented. Those recommendations must be shared with all CNC staff and the register of such discussion be sent to senior management as record of discussion.	As much as TSC11 did not know if the management reviews recommendations were implemented, she/he suggests that 'environmental care' should be given the same priority as the human and equipment care. TSCs9, 14 and 17 state that the Environmental Practitioners and/or Environmental Manager (Astrid October) play a vital role in making sure that the management reviews recommendations get implemented. However, TSC9 has personally implemented feedback form the Environmental Practitioner. TSCs3 and 15 did not respond, hence they did not know if the management reviews recommendations were implemented. However, TSC10 stated that she/he is aware through the road shows and bulletins distributed to them. TSC2 on the other hand, states that senior management get involved when environmental incident occurs as the incident recommendations that have to be implemented and a register of sharing the incident are sent to the senior management. Thus, senior management want proof and surety that the

				environmental incidents are shared amongst the TSCs/CNCs to prevent re-occurrence where possible, which on the other hand, could lead to continual improvement of the EMS.
		TSC3	N/A	
		TSC9	I know since I implemented feedback from our Environmental Practitioner.	
		TSC10	Road shows have been conducted, Bulletins have been distributed to us	
		TSC11	Ensuring Adherence could be part of the CNC monthly maintenance as the environmental care should be equal to the human and equipment care.	
		TSC14	At present, we receive assistance from Environmental Practitioners.	
		TSC15	N/A	
		TSC17	We receive info from Astrid October.	
6.	What measures are in place to make sure that such recommendations are implemented within reasonable time-frames?	TSC2	The register of the discussion have to be kept for a year or until the audit cycle.	As much as TSCs3, 11 and 15 do not know if the management reviews recommendations were implemented, they are aware of measures in place to make sure that such recommendations are implemented within reasonable time-frames. TSC3 believes regular audits is a measure in place, whilst TSC11 believes that Risk Audit System should be amended to ensure that the recommendations are implemented and TSC 15 claims that communication gets

				<p>sent out to them to action the findings after the management review or audit has taken place and that they must report their action progress weekly.</p> <p>It is clear from the responses of this question that the measure in place is the audits as is reflected on the responses from the TSCs2, 3, 9, 11, and 14. TSC9 further states that they get checked and follow-ups by the Environmental Practitioners are done. TSC10 adds that updating of their environmental files and training needs are also done, whilst TSC17 believes that the measures in place are the Wildlife interactions and KPI's as one will be able to measure continual if improvement based on the KPIs performance.</p>
		TSC3	Regular audits.	
		TSC9	Checks and periodic follow-up by Environmental Practitioners as well as the yearly audits helps ensuring that recommendations are implemented.	
		TSC10	Environmental Risk Practitioners have been going around explaining what needs to be done, updating our environmental files and training needs	
		TSC11	Risk Audit System should be amended to ensure that the recommendations are implemented.	
		TSC14	Audits	

		TSC15	After such a review or Audit a mail gets sent out for us as Supervisors to action accordingly and we need to reply on a weekly basis where we are with regard to the action items.	
		TSC17	Wildlife interactions and KPI's. You can check if your KPI's are doing good.	
7.	According to your own view, what is the aim of management review?	TSC2	Makes us aware that it is not about only supply restored and repairs supply to customer, we need to ensure that environment is looked after. The environment is not damaged for the sake of short term benefit. Our kids will continue to enjoy the good, quality of environment.	The majority of the respondents believe the aim of management review is ensure staff compliance with the legislation as is reflected on TSCs9, 10, 14 and 17 responses. TSC2, however, believes that the aim of management review is to sensitize them by looking after the environment to make sure that the future generation also enjoys it. TSC2 response supports the sustainable development by the 'Brundtland'. TSC9 view the aim of management review not just to ensure compliance, but implement improvements, which on its own ties up with the continual improvement of EMS, whilst TSC10 believes that the aim of management review is to ascertain whether the organisation is still in line with the new amendments Act (environmental). TSC11 on the other hand, believes that the aim of management review is to implement the effective ways to manage, maintain and apply ISO 14001, whilst TSC15 believes that it is to prevent any

				damage to the environment, people and the equipment where possible. TSC15 response is more like the triple bottom line that involves the environment, people and the economy (equipment).
		TSC3	Don't know	
		TSC9	To ensure compliance and implementation of improvements.	
		TSC10	To ascertain whether the organisation is still in line with the Act, especially new amendments.	
		TSC11	To implement the effective ways to manage, maintain and apply ISO 14001.	
		TSC14	To keep us updated on the requirements of law.	
		TSC15	To determine whether if all possible and necessary steps are being taken to prevent any damage to the Environment, Person and equipment.	
		TSC17	To ensure everyone work according to legislation.	
8.	Does the aim bring about results?	TSC2	Yes	All the respondents believe that the aim of the management review bring about results, with the exception of TSC3 whose response is not applicable and TSC11 who do not know as yet. It must be noted that TSC11 stated that she/he does not know on question 4 above if the management reviews recommendations

				were implemented.
		TSC3	N/A	
		TSC9	Yes	
		TSC10	Yes	
		TSC11	I do not know yet	
		TSC14	Yes	
		TSC15	Yes	
		TSC17	Yes	
9.	If so, what are the results?	TSC2	The number of incidents has reduced and the understanding from employees, when an incident occurs no person fumbles around everyone knows what to do, whom to call and contractors that will treat environmental incident. Environmental compliance at grass roots level employees has improved over the years.	As much as TSC11 does not know if the management review aim were/are affective, she/he has given the results, stating that the results could be monitored for progress. TSCs2, 9, 10 and 15 believe that they Region (Eskom Distribution: Western Region) is compliant to the legislation. TSC15 further states that the results are seen through the non-occurrence of the major incidents and few minor incidents due to preventative steps that are enforced through the management reviews recommendations and/or aims. The non-occurrence of the major incidents and few minor incidents is also supported by TSC2 and 14. TSC2 states that the number of incidents has reduced and that staff knows exactly what steps to follow when an incident occurs. TSC14 states that they do not have findings or repeats on their audits. TSC17 states that through management reviews aims/recommendations

				communicated to them, the staff does not only know the Eskom's focus, but they also know what to do. TSC11, however, states that time the results could be monitored for progress.
		TSC3	N/A	
		TSC9	Compliance.	
		TSC10	Senior Supervisors are not trained or rather did not study Environmental Law, communicating reviews to us is of paramount importance so that we comply with the Law all the time.	
		TSC11	This could be monitored for progress.	
		TSC14	We do not have findings or repeats on our audits.	
		TSC15	Compliance and no Major incidents as well as less minor incidents due to preventative steps.	
		TSC17	People know what to do and they know the focus of Eskom.	
10.	What do you consider as the key significant aspects within Minor Engineering Works/Major Engineering Works (MEW) and/or TSCs?			Various key significant aspects have been identified here as within Minor Engineering Works/Major Engineering Works (MEW) and/or TSCs.
	Minor Engineering Works	TSC2	Blank	Driving, Noise, environmental conditions like heat/cold/weather, protected areas/ Nature Reserves, venomous bites, soil

				erosion, nest removal, oil spillage, veld fires, sewerage disposal, litter/waste, energy, water, asbestos; maintenance of the site where minor works take place, the zero harm to environment needs to be a culture that is internalized by the Minor Engineering Works personnel; inspections of all equipment & powerlines as well as operating and building have been identified key significant aspects under Minor Engineering Works. TSC2, 3, 10, 14 and 17 did not respond under this section, probably because they work in the TSCs.
		TSC3	Blank	
		TSC9	Driving, Noise, Environmental conditions like heat/cold/weather, Protected areas/ Nature reserves, venomous bites, soil erosion, Nest removal, Oil spillage, veld fires, sewerage disposal, litter/waste, energy, water, asbestos.	
		TSC10	Blank	
		TSC11	Managing of oil spill, ensuring of maintaining the site where minor works take place, the Zero harm to Environment needs to be a culture that is internalized by the Minor Engineering personnel	
		TSC14	Blank	
		TSC15	Maintenance, inspections of all equipment & lines as well as operating and building.	

		TSC17	Blank	
	Major Engineering Works	TSC2	Blank	TSC9 has identified the same key significant aspects for both Minor and Major Engineering Works. Other key significant aspects are maintenance and building. TSC11 claims that the key significant aspects of Major Engineering Works will only be noticed once every engineering task has been designed in such a way that it is environmentally friendly and approved in conjunction with the conformance to the ISO14001. He further states that penalties must be in place where these tasks are not approved to ensure that the environment is not degraded in the process. TSC2, 3, 10, 14 and 17 also did not respond under this section, probably because they work in the TSCs.
		TSC3	Blank	
		TSC9	Driving, Noise, Environmental conditions like heat/cold/weather, Protected areas/ Nature reserves, venomous bites, soil erosion, Nest removal, Oil spillage, veld fires, sewerage disposal, litter/waste, , energy, water, asbestos.	
		TSC10	Blank	
		TSC11	Every engineering task must be designed in such a way that it is Environmental friendly, therefore all the Major Engineering works must	

			be approved in conjunction with the adherence to the ISO14001, and the penalties must be in place where these major engineering works are not approved to ensure that the environment is not degraded in the process.	
		TSC14	Blank	
		TSC15	Maintenance and building	
		TSC17	Blank	
	TSCs	TSC2	The CNC staff are mostly exposed to environmental incident and likely to cause one because normal the support technical experts are not easily accessible. They have to make trial and error in some cases they will not be aware that there is a contractor working in the area and committing violation. The area covered is usually vast.	The key significant aspects within the TSCs are environmental incidents, oil spillages, use of vegetation management contractors, Champion Trees, training, Legal compliance; vegetation management; oil spill management; wildlife management; fire management, maintenance, inspections of all equipment & powerlines as well as operating and building. Interestingly, TSC15 gave the same response across this question. TSC9 did not respond on this section probably because she/he does not work for the TSC. However, TSC17 also left it blank and the reason behind cannot be speculated.
		TSC3	Oil spillages; use of vegetation management contractors; Champion Trees.	
		TSC9	Blank	
		TSC10	Audit consistency in interpretations	

			of the questionnaires.	
		TSC11	TSC's are the eyes and the ears of our business, and they need to internalise a culture of Zero harm to the Environment ,they must be trained and motivated in such a way that they leave the site as it was before the repairs or maintenance.	
		TSC14	Legal compliance; vegetation management; oil spill management; wildlife management; fire management.	
		TSC15	Maintenance, inspections of all equipment & lines as well as operating and building.	
		TSC17	Blank	
11.	Do you think management reviews address findings of internal/external audits within Minor Engineering Works/Major Engineering Works (MEW) and/or TSCs?	TSC2	Yes	All the respondents have responded with a positive answer except TSC3 who does not know if management reviews address findings of internal/external audits within Minor Engineering Works/Major Engineering Works (MEW) and/or TSCs. It is interesting to get a positive response on this question as it is on question 8 above that enquire if the management reviews aim brings about results. Only TSC11 on question 8 stated that she/he does not know if the management reviews aim brings about results. However, on this question (question 11) he thinks management reviews address findings of internal/external audits within Minor

				Engineering Works/Major Engineering Works (MEW) and/or TSCs.
		TSC3	Don't know	
		TSC9	Yes	
		TSC10	Yes	
		TSC11	Yes	
		TSC14	Yes	
		TSC15	Yes	
		TSC17	Yes	
12.	If yes, how? Please give answer where relevant to you.			
	Minor Engineering Works	TSC2	N/A	It must be noted that all the respondents are the TSCs Senior Supervisors, only one of them works under the Minor Engineering Works, i.e., none of them works for the Major Engineering Works. However, TSC9 believes that management reviews address findings of internal/external audits within Minor Engineering Works as he states that from a management point of view, management reviews ensure that measures based on findings and recommendations from audits and investigations are checked, verified and put in place.
		TSC3	N/A	
		TSC9	Management review ensures that from a management point of view it is checked and verified that measures are put in place based on	

			findings and recommendations from audits and investigations.	
		TSC10	N/A	
		TSC11	N/A	
		TSC14	N/A	
		TSC15	N/A	
		TSC17	N/A	
	Major Engineering Works	TSC2	N/A	None of the respondents answered this question as it is stated above that none of the respondents works for Major Engineering Works.
		TSC3	N/A	
		TSC9	N/A	
		TSC10	N/A	
		TSC11	N/A	
		TSC14	N/A	
		TSC15	N/A	
		TSC17		
	TSCs	TSC2	The recommendation's purpose is to ensure that similar incident are not repeated by staff, all previous incidents have been repeated. The sharing of incident with other CNCs that was not involved is to make sure that the other CNCs are careful when they are dealing with matters of the environment.	TSCs2, 11 and 15 believe that management reviews address findings of internal/external audits within TSCs sharing of lessons' learnt across the business from the incidents that occurred from the other TSCs to avoid similar incidents from re-occurring. TSC15 claims that the information sharing allows them to rectify possible deviations at their sites/TSC, which is connected with the continual improvement element of the EMS. On the other hand, TSC14 claims

				that management reviews ensures no audit findings within TSCs. TSC17 on the other hand, claims that management reviews alert them to fix problems and that her/his TSC strive to be the best TSC.
		TSC3	N/A	
		TSC9	N/A	
		TSC10	CNC's when audits are conducted, CNC's are not part of the audit panel hence communicating reviews is essential.	
		TSC11	The findings are communicated by the senior Supervisors in ensuring that the lessons learnt are applied across the business in avoiding the similar incidents from occurring.	
		TSC14	Ensures no audit findings.	
		TSC15	After such audits were done somewhere the findings get shared within our business for info as well as to enable us to rectify possible deviations at our sites of work.	
		TSC17	We must fix problem if there is a problem. We as Field Service TSC, we strive to be the best.	
13.	If no, how and how can they improve?			It must be noted that All the respondents on question 11 above have responded with a positive answer except TSC3 who does not know if management reviews address findings of internal/external audits within Minor Engineering Works/Major

				Engineering Works (MEW) and/or TSCs, therefore, it is expected that the response on this question should be not applicable. However, one and more on each category have responded still. Thus, TSC15 believes that for Minor Engineering Works, sharing the audit findings within the business will bring improvement. However, this contradicts her/his statement on 12 above as she/he states that sharing of findings within the business is taking place already. It could be that more sharing is required.
	Minor Engineering Works	TSC2	N/A	
		TSC3	N/A	
		TSC9	N/A	
		TSC10	N/A	
		TSC11	N/A	
		TSC14	N/A	
		TSC15	By sharing the audit findings within the business.	
		TSC17	N/A	
	Major Engineering Works	TSC2	N/A	TSC15 has also stated that sharing the audit findings within the business will bring improvement.
		TSC3	N/A	
		TSC9	N/A	
		TSC10	N/A	
		TSC11	N/A	
		TSC14	N/A	

		TSC15	By sharing the audit findings within the business.	
		TSC17	N/A	
	TSCs	TSC2	N/A	The other recommendations here even though all the respondents on question 11 have responded with a positive answer except TSC3 who does not know if management reviews address findings of internal/external audits within Minor Engineering Works/Major Engineering Works (MEW) and/or TSCs are that the business is to have EMS info sessions; appoint an Environmental person to be based at the CNC; more training could help the CNC personnel to understand the real need to care for the environment when performing their tasks; revise documents more often; sharing the audit findings within the business; and make staff more aware of the environment and the legislation pertaining to it.
		TSC3	Have EMS info sessions; appoint an Environmental person to be based at the CNC.	
		TSC9	N/A	
		TSC10	N/A	
		TSC11	More training could help the CNC personnel to understand the real need to care for our environment when performing our tasks.	
		TSC14	Revise documents more often.	

		TSC15	By sharing the audit findings within the business.	
		TSC17	Train the employees more and make people more aware of the environment and the legislation.	
14.	According to your own view is top management fully supportive of EMS?	TSC2	Yes the programs and training that we have to attend management enjoys full support of management. Sometimes they will import an environmental specialist who will provide training to the regional staff on matters pertaining to environment.	<p>All the participants responded positively on this question, except TSC10 who is not sure and feels that the TSCs should be ready at all times for audits and not be expected to implement standards, policies and procedures at the last moment. She/he presumes attending seminars will assist them.</p> <p>On a positive note, top management full support of EMS is demonstrated in the form of SHEQ Policy; environmental training of TSC staff; communication in various media channels like magazines, public statements in newspapers, television etc; various policies and procedures put in place and compliance ensured; investing in hiring more environmental informed personnel in ensuring that every environmental incident is investigated, recommendations are applied and the findings are looked at; funding provided by top management to address environmental issues; top management commitment to the EMS and by pressuring the TSCs to comply; and top management making sure they come up with solutions regarding audit findings.</p>

				However, besides positive remarks, TSC11 feels that the top management needs to be more visible on site to ensure and motivate staff on taking care of the environment.
		TSC3	Yes. SHEQ Policy.	
		TSC9	Yes. This can be seen in what is communicated in various media channels like magazines, public statements in newspapers, Television etc. When one considers the various policies and procedures put in place and compliance ensured one could deduce that top management supports EMS.	
		TSC10	I'm not sure. We should be ready at all times for audits and not be expected to implements stuffs at the last moment. Attending seminars will help.	
		TSC11	Yes. The business has started investing in hiring more environmental informed personnel in ensuring that every environmental incident is investigated, recommendations are applied and the findings are looked at. However they can be more visible on site to ensure and motivate staff of the taking care of the environment.	
		TSC14	Yes. They also have to comply with legislation. Management provides	

			funding to address environmental issues.	
		TSC15	Yes. By committing themselves to the EMS and by pressuring us to comply	
		TSC17	Yes. There are audits yearly. If something goes wrong it is discussed at management level and they must fix the problem.	
15.	Due to management reviews conducted annually, have you seen an improvement or a decline in environmental performance in the TSC and/or MEW?	TSC2	No I have not seen a decline but just the opposite.	All the participants have seen an improvement in environmental performance due to annual management reviews, except TSC11 who had not seen the management reviews results. TSC10 further states that Environmental Practitioners have become much visible in the TSCs/CNCs, however, would like the Environmental Practitioners to form part of their Production Plan meetings.
		TSC3	Improvement	
		TSC9	Our MEW performance has remained at an acceptable level.	
		TSC10	Yes I have seen, awareness is the way to go. Practitioners visiting the CNC's and becoming part of our meetings is helping, but more can be done by them in forming part of our Production Plan meetings.	
		TSC11	I have not seen the reviews	
		TSC14	Definate improvement.	
		TSC15	Improvement.	

		TSC17	Improvement	
16.	Why do you say so?	TSC2	Since I have been at the current CNC I have not seen an environmental incident at my CNC including the surrounding ones. It has been a very long time since I have last head of incident. When it comes to illegal contravention it has been years since we had one also with surrounding CNC.	Seemingly, there is more awareness and compliance in the TSCs as it is supported by the responses for this question, specifically, TSCs14 and 17. The environmental incidents have declined as observed by TSC2 and 3. TSC2 further states that incidents have also decreased not only in her/his TSC, but the surrounding TSCs as well. He further gives an exception to the legal contraventions, stating that they have not occurred for a number of years. TSC9 based his positive response on the fact that there were no findings on the audits conducted in her/his TSC. TSCs10 and 15 have gone as far as implementing standards and procedures with their staff in order to comply and therefore, avoid legal contraventions and possible, environmental incidents as observed by TSC2. TSC17 states that the TSC people apply bird flappers where birds get electrocuted or collide with the powerline/s. This is done so as to prevent future collisions and electrocutions.
		TSC3	Less environmental incidents.	
		TSC9	This is based on the audits and the fact that no findings were issued.	
		TSC10	Firstly, the way we work now we try by all means to prevent incidents and working in accordance with	

			standards and procedures.	
		TSC11	N/A	
		TSC14	Everybody is more aware in terms of environmental issues.	
		TSC15	Because at my own site of work I had to implement quite a lot of new procedures and train my staff to better comply.	
		TSC17	The TSC people apply bird flappers where birds are killed and the TSC people are more aware of what is checked.	