Eskom Holdings SOC Limited
Environmental Management Strategy
2014/15 – 2017/18
June 2014
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1 EXECUTIVE SUMMARY

The livelihood of all South Africans is dependent upon the environment within which they live and they have a right to live in a healthy and safe environment. Eskom's operations impact on the environment both positively and negatively. Our activity relies heavily on the availability of energy resources both renewable and non-renewable as well as access to land. Eskom's environmental performance for most of the key performance areas is below target and has declined over the past decade.

The current environment that Eskom operates in poses a number of short term challenges:

- The funding gap of R225 billion created by the MYPD3 determination requires significant shifts in the business.
- The power system will remain constrained over the next two years.
- Lower projected sales are increasing the projected funding shortfall.
- Increased pressure on the credit rating associated with the country’s credit profile and Eskom’s financial profile.
- The utility business model is changing not only in Africa but also globally and Eskom needs to change our business model in order to ensure longer term growth and agility.

For Eskom to deliver on its mandate, the response plan aims to ensure that Eskom is sustainable along seven distinct dimensions of sustainable asset creation; financial sustainability; operational sustainability; building a sustainable skills base; environmental sustainability; transformation and social sustainability; and building a solid reputation. The three strategic agendas for Eskom of sustainable asset creation; financial sustainability; operational sustainability have thus been expanded to include an additional 4 medium term priorities to ensure sustainability in the longer term. Exhibit 1 outlines the seven dimensions of sustainability.
Exhibit 1: Eskom’s Seven Sustainability Dimensions

The primary driver for the environmental strategy is Eskom’s “license to operate” – stakeholder acceptance (e.g. public, Funders and Regulators). This includes:

- Duty of care – sustainable development that includes economic, environmental and social responsibility
- Eskom reputation

What is the environment? The National Environmental Management Act defines the environment as follows: Environment means the surroundings within which humans exist and that are made up of –

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.
In Eskom’s terms the above means the surroundings within which we operate (and are dependent upon) that are made up of the land, water and atmosphere of the earth, plant and animal life and their inter-relationships. Eskom activities have a negative impact on the environment and it is Eskom’s aim to reduce its environmental footprint. In so doing Eskom will also minimise negative environmental impact and at the same time reduce negative financial, reputational and technical implications.

Eskom has an impact to the environment and therefore as a corporate citizen has a responsible for environmental duty of care and must take reasonable measures to prevent pollution or degradation from occurring, continuing or recurring.

This environmental management strategy is put together to lead and instil a culture of environmentally responsible behaviour across Eskom by Eskom management, employees and contractors – duty of environmental care leading to maintaining our “licence to operate” from our various stakeholders.

The reason we require a robust environmental management strategy lies in the fact that despite pockets of improvements in Eskom’s environmental performance over the years, Eskom’s non-compliance to environmental issues (legislation and performance targets set) has also grown to the point where these non-compliances are now beginning to become significant liabilities and risks to the organisation’s continued operations both in terms of its licence to operate and reputation. Furthermore, competing priorities in a constrained environment are also significantly adding to the environmental issues. All this together highlight the importance of having a solid stance and a dedicated approach to bring about a step change in environmental management and compliance in order to sustain Eskom operations and keep the lights in South Africa burning going forward.

This environmental management strategy is put together to lead, guide (shape) and instil a culture of environmentally responsible behaviour across Eskom and to assure (safe guarding) Eskom achieves a reduction of its environmental footprint that leads to improving Eskom’s environmental reputation and maintaining its licence to operate.
The above is enhanced and entrenched in Eskom through the introduction of ZERO Harm to people and the environment as a value in Eskom. Therefore Eskom’s commitment is to ensure environmental duty of care in all that it undertakes.

Given the above, Eskom’s overarching environmental objectives are set to contribute to Eskom’s need for sustainable development for the periods up to 2017/18 are as follows:

1. **Informed decision-making to avoid harm to the natural environment, minimising financial and legal liabilities** through effective leadership, appropriate governance structures with competent skills.

2. **Achieve legal compliance to** environmental legislation as a minimum requirement in all activities through effective management systems, monitoring, reporting and research.

3. **Reduce particulate and gaseous emissions** to minimise the impact on human health and complying with regulated emission standards.

4. **Reduce fresh water usage** and eliminate liquid effluent discharge to avoid impacting water resources, including groundwater through effective water management processes and the use of mine water.

5. **Enhance efficiency of waste management through reduction, reuse and recycling practices.**

6. **Minimise the impact** of our activities on ecosystems and enhance ecosystem services through responsible land management practices.

To deliver on the above objectives, the Environmental Management capability within Eskom shall be a centre led function from a shaping and safeguarding (policy, compliance and implementation co-ordination) perspective. The organisational capability to deliver on this strategy vests within the Sustainability Systems department in the Sustainability Division and the operating units. Based on the current skills set and resources within the organisation there are generally sufficient human resources to implement the strategy. Distribution is currently reviewing its resources to confirm that the resources are adequate.
This environmental management department will be the driver behind this environmental strategy which focuses on addressing the following seven key areas to achieve the desired six environmental management objectives and bring about the step change sought:

1. **Connecting** environmental management to all activities which could impact on the environment. Personalising caring for the environment internal and external to Eskom.

2. Attaining **commitment** to ZERO harm, ZERO environmental incidents and pro-active environmental management across Eskom.

3. Making **compliance** a minimum standard which is non-negotiable – meaning commitment to environmental duty of care as set out in the National Environmental Management Act and that Eskom will comply with current and future license and legislative requirements.

4. Ensuring that we have an optimal environmental organisation structure resourced with the required **competencies** and number of competent staff to deliver on the mandate and expectations of Eskom’s vision and corporate plan.

5. **Communicating** environmental management and how to achieve ZERO harm in a manner that entrenches and re-enforces the ZERO Harm Value, best practice and world class practices.

6. **Consistency** of actions, ensuring that there is consistency across the business, that decisions taken are implemented and lead to the pro-active protection of the environment.

7. Ensuring that we have a cycle of **continuous improvement**, tracking and monitoring in environmental management through the development of appropriate KPA’s, KPI’s and pro-active shaping and safeguarding processes.
### Table 1: Key Environmental Management Performance Indicators

<table>
<thead>
<tr>
<th>KPI</th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 14001</td>
<td>Attain certification for Dx and maintain certification for other divisions</td>
<td>Attain certification for ERE and maintain Certification for other divisions</td>
<td>Maintain Certification</td>
<td>Maintain Certification</td>
</tr>
<tr>
<td>Environmental Training</td>
<td>Environmental training plans with targets established</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
</tr>
<tr>
<td>Eskom off-sets position</td>
<td>Eskom position</td>
<td>Pilot project (air quality and biodiversity)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction in Eskom’s environmental legal contraventions</td>
<td>35</td>
<td>32</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>Legal contraventions in terms of the OHD</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Postponement from MES</td>
<td>Successful application for postponement from MES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point source air quality monitoring</td>
<td>Installation of equipment 80% reliable and accuracy of data</td>
<td>Maintain 80% reliable and accuracy of data</td>
<td>Maintain 80% reliable and accuracy of data</td>
<td>Maintain 80% reliable and accuracy of data</td>
</tr>
<tr>
<td>Ambient air quality monitoring</td>
<td>SANAS accreditation of stations</td>
<td>Maintain accreditation</td>
<td>Maintain accreditation</td>
<td>Maintain accreditation</td>
</tr>
<tr>
<td>Air quality off-sets</td>
<td>Pilot research funded</td>
<td>Completion of off-sets pilot research</td>
<td>Implementation of off-sets</td>
<td>Implementation of off-sets</td>
</tr>
<tr>
<td>Particulate emissions</td>
<td>0.35</td>
<td>0.34</td>
<td>0.32</td>
<td>0.30</td>
</tr>
<tr>
<td>Specific water use</td>
<td>1.39</td>
<td>1.38</td>
<td>1.37</td>
<td>1.36</td>
</tr>
<tr>
<td>Blue and Green Drop certification</td>
<td>50% of plants achieving certification</td>
<td>100% of plants achieving certification</td>
<td>Maintain certification</td>
<td>Maintain certification</td>
</tr>
</tbody>
</table>
As set out in Eskom’s Corporate Plan (Financial years 2014/15-2017/18), Eskom has an environmental mandate and strategy for air quality, land, water and waste/ash management. Environmental compliance is critical to ensuring that Eskom maintains its licence to operate, keeps the lights on, and meets its “zero harm” mandate under complex and evolving compliance requirements.

<table>
<thead>
<tr>
<th>Industry Waste Management plan</th>
<th>Developed and in place. Gx targets are: 15% ash recycled; 100% oil recycled</th>
<th>Implement and achieve plan deliverables</th>
<th>Implement and achieve plan deliverables</th>
<th>Implement and achieve plan deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB phase-out</td>
<td>Plan for the phase out of PCB’s</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
</tr>
<tr>
<td>Ash utilization</td>
<td>2.2 MT (6%)</td>
<td>3.6 MT (10%)</td>
<td>7.2 MT (20%)</td>
<td>10.8 MT (30%)</td>
</tr>
<tr>
<td>Gypsum utilization</td>
<td>Gypsum utilization commercial strategy in place</td>
<td>Targets to be set based on strategy outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of mortalities of protected bird species</td>
<td>Reduction and % of wildlife interactions mitigated within four months 85% Dx, 70% Tx</td>
<td>New measures to be developed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities to enhance biodiversity on Eskom properties</td>
<td>Proclamation of Ingula Nature reserve</td>
<td>Measures to be developed based on biodiversity plans for Eskom land</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A key area of environmental management is the reduction of the carbon footprint through efficient productions and the change in the energy mix. This aspect is covered in the Operational Plan for Climate Change and Sustainable Development, another department within the Sustainability Division.

Eskom’s Climate Change Strategy is based on the following six step approach:

1. **Diversification of generation mix** – clean coal, nuclear, renewables, gas, imports.
2. **Energy efficiency** – reduce demand by 3038 MW in the 2012-2017 period and Internal Energy Efficiency measures (billion kWh programme)
3. **Adaptation to the impacts of climate change**, e.g. by using dry-cooling on new plant.
4. **Innovation through R&D**, examples include solar thermal plant, smart grids, underground coal gasification
5. **Carbon Financing and opportunities for trading in the global CO₂ market**. Eskom’s Green Financing strategy will be completed this year
6. **Advocacy, partnership, and collaboration with national and international stakeholders**
The strategy outlines Eskom’s intended Environmental strategic direction for the financial years 2014/15 to 2017/18 and puts a specific focus on our immediate priorities for 2014/15.

This environmental management strategy has been approved by Eskom’s EXCO in June 2014 and signed on its behalf by:

Collin Matjila
Chief Executive (Acting)
Signature: __________________________
Date: 24/07/14

Dr Steve Lennon
Group Executive: Sustainability Division
Signature: __________________________
Date: 18/11/14

Erica Johnson
Group Executive: Enterprise Development Division
Signature: __________________________
Date: 21/12/2014

Next Review Date: 31/03/2018

Disclosure Classification: Confidential

Information security

This environmental management strategy must be treated in accordance with the Eskom Information Security Policy 32–85.

Information resources are Eskom’s business-critical assets requiring a high level of protection. Sufficient measures commensurate with the risk must be taken to protect these information resources against accidental or unauthorised modifications, disclosure and/or destruction, as well as to assure the confidentiality, integrity and availability of Eskom’s information resources.
3 CONTEXT

3.1 Purpose of the Environmental Management strategy

Eskom’s commitment to environmental duty of care is based on its purpose “to provide sustainable electricity solutions to grow the economy and improve the quality of life of people in South Africa and the region”, its value of “zero harm” and its strategic objective in “reducing Eskom’s environmental footprint and pursuing low carbon growth opportunities”.

The purpose of this environmental management strategy is about maintaining its “licence to operate” and achieving Eskom’s purpose, values and strategic objectives. This environmental strategy forms a part of Eskom’s intent for sustainable development and the recognition that decision-making in Eskom is based on economic, environmental, social and technical criteria. It is therefore recognised that to ensure sustainable development trade-offs are uncounted in such decision-making while ensuring duty of care in all areas of Eskom’s business.

The strategy covers the period commencing April 2014 to March 2018.

3.2 Eskom at a glance

Eskom is one of the top 20 utilities in the world by generation capacity (net maximum capacity: 41,194 MW). It generates approximately 95% of the electricity used in South Africa and more than 40% of the electricity used in Africa. It operates 27 power stations – thereof more than 85% coal-fired, with the remaining 15% composed of a mix of nuclear, open cycle gas turbine, hydro and pumped storage plants – and has 395,582 km of power lines and cables.

Eskom currently operates along the entire electricity value chain. It generates, transmits and distributes electricity to industrial, mining, commercial, agricultural and residential customers and redistributors, with a total of some 4.65 million customers. Additional power stations and major power lines are being built to meet the rising electricity demand in South Africa.
3.3 Environment Management at a glance (status quo and history)

The current environment that Eskom operates in poses a number of short term challenges:

- The funding gap of R225 billion created by the MYPD3 determination requires significant shifts in the business.
- The power system will remain constrained over the next two years.
- Lower projected sales are increasing the projected funding shortfall.
- Increased pressure on the credit rating associated with the country’s credit profile and Eskom’s financial profile.
- The utility business model is changing not only in Africa but also globally and Eskom needs to change our business model in order to ensure longer term growth and agility.

For Eskom to deliver on its mandate, the response plan aims to ensure that Eskom is sustainable along seven distinct dimensions of sustainable asset creation; financial sustainability; operational sustainability; building a sustainable skills base; environmental sustainability; transformation and social sustainability; and building a solid reputation. The three strategic agendas for Eskom of sustainable asset creation; financial sustainability; operational sustainability have thus been expanded to include an additional 4 medium term priorities to ensure sustainability in the longer term. Exhibit 2 outlines the seven dimensions of sustainability.
Exhibit 2: Eskom’s Seven Sustainability Dimensions

Zero harm to the environment meaning zero environmental incidents. When we conduct our business of building a legacy that every employee, his/her family, and future generations can be fiercely proud of, the environment is a key consideration.

What is the environment?
The National Environmental Management Act defines the environment as follows:

Environment means: *the surroundings within which humans exist and that are made up of –*

- *the land, water and atmosphere of the earth;*
- *micro-organisms, plant and animal life;*
- *any part or combination of (i) and (ii) and the interrelationships among and between them;* and
- *the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;*
In Eskom’s terms the above means the surroundings within which we operate (and are dependent upon) that are made up of the land, water and atmosphere of the earth, plant and animal life and their inter-relationships. Eskom activities have a negative impact on the environment and it is Eskom’s aim to reduce its environmental footprint. In so doing Eskom will minimise negative environmental damage as well as financial, reputational and technical impacts.

The provision of reliable and affordable electricity is not only a commercial undertaking – it is also critical to the hopes and dreams and livelihood of the citizens of South Africa. In other words, Eskom plays a major role in fulfilling the aspirations of South Africa. The livelihood of all South Africans is dependent upon the quality of the environment. Eskom’s operations are also dependent on this same environment.

Duty of care requires ensuring decisions and actions are taken in the context of sustainable development and therefore trade-offs are need to be made between economic, environmental, social and technical aspects.

Exhibit 3: The three areas of Sustainability

Because of our sheer size and impact of our operations on the environment we need to play a leadership role in environmental management in South Africa. A key driver in enabling us to be in the top 5 utilities in the world is our environmental performance and practices.

This environmental management strategy is put together to lead and instil a culture of environmentally responsible behaviour across Eskom by Eskom management, employees and contractors that leads to sustainable development through environmental duty of care.
The reason we require a robust environmental management strategy lies in the fact that decisions related to environmental management are often long term and the cost of mitigation is significant. Further, despite pockets of improvements in Eskom’s environmental performance over the years, Eskom’s non-compliance to environmental issues (legislation and performance targets set) has also grown to the point where these non-compliances are now beginning to become significant liabilities and risks to the organisation’s continued operations and to Eskom’s reputation. Furthermore, competing priorities in a constrained environment are also significantly adding to the environmental issues and affecting sustainable development. All this together highlight the importance of having a solid stance and a dedicated approach to bring about a step change in environmental management and compliance in order to sustain Eskom operations and keep the lights in South Africa burning going forward.

### 3.3.1 Recent history

Environmental legislation has evolved very rapidly since 1983 when The World Commission on Environment and Development (Brundtland Commission) met to discuss growing concerns of environmental degradation. South African environmental legislation has changed significantly since 1994 starting with the Constitution. The National Environmental Management Act 107 of 1998 is an overarching environmental Act. In recent years several Acts including the National Environmental Management Air Quality Act, National Environmental Management Waste Act, Biodiversity Act and the Water Act have been enacted into law. The evolving legislation has an impact on Eskom and requires a step change in various areas of the business to bring Eskom into full compliance now and into the future.

The environmental compliance context in which Eskom operates is dynamic due to the changing and more stringent environmental legislation and the level of enforcement from the authorities has increased. This has taken place in parallel to the operational challenges within Eskom – execution of a build programme with tight timeframes and the operational challenges (the need to “keep the lights on”, plant failure due to the lack of outages for maintenance and limited opportunity to implement improvement projects related to air quality and water use) and a transition to increased generating capacity.
It is noted that Eskom’s construction and operational sites have been subjected to inspections by the Department of Environmental Affairs (DEA) Environmental Management Inspectors (EMIs or better known as the “Green Scorpions”). To date close to 50 such inspections have taken place resulting in seven pre-compliance notices issued to Eskom.

In addition, Eskom’s operational challenges (“to keep the lights on”) together with unrealistic Atmospheric Emission Licences (AELs) make it extremely difficult to meet legislative requirements and while engagements are taking place with the environmental authorities in this regard, the ability to comply with emissions standards at present is in some cases not possible.

As set out in Eskom’s Corporate Plan (Financial years 2014/15-2017/18), Eskom has an environmental mandate and strategy for air quality, land, water and waste/ash management. Environmental compliance is critical to ensuring that Eskom maintains its licence to operate, keeps the lights on, and meets its “zero harm” mandate under complex and evolving compliance requirements.

Given the constraints relating to generation capacity and funding, Eskom is putting forward an air quality plan that will allow it to move towards meeting 57% of the minimum emission standards by 2025. In accordance with this plan, R8.7 billion will be required up to 2017/18. For this, the currently approved projects amount to R3 billion. The remaining R5.7 billion will be prioritised together with other critical Eskom projects and will be presented to the Board Investment Committee for approval. The total amount required to achieve 57% by 2025 amounts to R72 billion, while the funding if Eskom is required to comply fully with the minimum emission standards is R200 billion. Funding for other “must do” projects (e.g. installation of fabric filter bags at some power stations) and other environmental compliance projects and pollution prevention activities (e.g. waste site monitoring) have been confirmed as a priority but funds are continuously diverted to other significant priorities.

Receiving of water use licences timeously remains a challenge despite some long outstanding licenses being issued in the last financial year.

Continued non-compliance will result in several negative outcomes including, reducing load at power stations, and shutting down of power plant, and increasing administrative fines, criminal action against individuals and negative decisions on applications for new activities. It will also result in reputational damage which will certainly negatively impact the ability to raise the required funding for projects.
The controls in place to treat the causes of non-compliance include ensuring management commitment to address operational and design shortcomings and the execution of the technical plans for water and air quality improvements. In addition to implement integrated compliance management, sufficient influence over legislation and addressing conflicting business is required. These however are not being effectively executed to date and require an added focus to ensure success.

Globally, there is a decline in the quality and quantity of fresh water combined with increased competition among resource-intensive systems, such as food and energy production. South Africa is also experiencing this dynamic. Eskom power stations depend on an adequate supply of water of a certain quality. This may be compromised in the future due to competing needs in other economic sectors, lack of infrastructure to transport water and increasing pollution of water resources.

The consequences of this risk materialising are production losses, increased cost of generation, and the inability to perform emissions abatement and a negative impact on the brand and reputation should Eskom be seen as competing for fresh water to the detriment of the community.

### 3.3.1.1 Environmental operational performance

Eskom’s operational performance in the recent past has been declining and has fallen below international standards across key dimensions including power plant performance, transmission network performance, distribution network performance, occupational health and safety performance, and customer satisfaction.

### Environmental Legal non-compliances

Eskom continues to contravene environmental legislation in all areas of the business which has a significant impact on the environment.
Air Quality

Just on 31% of Eskom’s 2013/14 (2013: 30%) environmental legal contraventions were related to non-compliance with conditions (standards) set out in respective power station Atmospheric Emissions Licences. This was significantly contributed to by the poor overall particulate emissions performance over the same period. The particulate emissions performance for the 2012/13 financial year did not meet target (target: 0.30 kg/MWhSO) and was at 0.35 kg/MWhSO. For 2013/14, Eskom’s particulate emissions performance was 0.35 kg/MWhSO which was better than the target of 0.36 kg/MWhSO, and the same performance as previous year.

This poor performance, at some stations, was influenced by the power stations’ ash-handling systems’ inability to dispose of the ash collected, due to the high ash content of coal received. Outages for plant repair and refurbishment are needed for many units, but this is not possible given the constrained system. Together with this high level of non-compliance, Eskom power stations operated 39% of the time under exemption from conditions of their Atmospheric Emission Licences during the financial year.
Water Usage

As a strategic water user, Eskom is committed to being proactive in addressing water management challenges by establishing and implementing water management policies, strategies, systems, processes, practices, procedures and research initiatives to ensure compliance with legislative requirements.

Electricity generation currently accounts for about 2% of the total freshwater use nationally, Eskom is the single largest industrial user of water and as such it’s important that Eskom’s water management initiatives are aligned to those of best practice.

Approximately 19% of Eskom’s 2013/14 (2013: 30%) environmental legal contraventions were related to non-compliance with either the National Water Act (section 19 related to water pollution) or non-compliance with Water Use licences (WUL). However some of the reasons for water contraventions were related to high rainfall especially during February and March 2013. The water performance for the 2012/13 financial year did not meet target (target: 1.32 l/kWhSO) and was at 1.42 l/kWhSO. Water usage for the 2013/14 financial year was better than the previous years at 1.35 l/kWhSO. The increasing trend in water usage was influenced by many factors including rainfall, the high number of power station start-ups, additional activities such as air heater washing and the inability to obtain half station shut downs to stop significant leaks at some power stations, this is an improvement on the previous year’s performance of 1.42 l/kWhSO.
The SA Government has made a commitment to the three objectives of the Convention on Biological Diversity (CBD): the conservation of biological diversity; the use of the components of biological diversity in a sustainable manner; and the fair and equitable sharing of the benefits of biological diversity. Eskom owns land and has registered servitudes throughout the country. This ownership brings with it a responsibility to maintain the biodiversity potential and the ecosystem services of that land and provides opportunities to contribute to the South African network of conservation areas. An Eskom Land and Biodiversity Policy and Standard were developed stating that Eskom shall ensure, in the planning, construction, operation and decommissioning of its activities that measures are in place to limit the impact of its infrastructure, land use and use of other resources on biodiversity and shall comply with all applicable legislation. Eskom currently measures the impact of its operation on wildlife through a partnership with the Endangered Wildlife Trust (EWT). Results from the partnership shows that significant numbers of mortalities occurred in the period 1996 – 2013. Of these, it is noted that the total number of red data bird fatalities reported for the 2014 financial year-end was 305 (Distribution 246 and 59 for Transmission). The performance has worsened from the two hundred and twenty (220) red data mortalities recorded in the 2012/13 financial year.
Graph 4: Distribution annual reported bird mortalities (1996 – 2014)

Graph 5: Transmission annual reported bird mortalities (1996 – 2014)

Waste Management

Waste disposed of is reported and waste management practices are continually reviewed. In terms of the National Environmental Management Waste Act, 2008 (Act 59 of 2008) industry may develop waste management plans to ensure effective reduction and management of waste. The line divisions have made progress with the development and in some instances the implementation of waste management plans. There is a need to increase the utilisation of ash, reduce the quantities of waste produced, phase out hazardous waste such as asbestos and PCB’s within prescribed
timelines; asbestos phase-out by 2033 and PCB phase-out by 2025 respectively. This is to be undertaken by the relevant line Divisions and monitored within the Divisions with oversight by the Sustainability Division.

ISO 14001 Environmental Management System

The Eskom target was to achieve ISO 14001:2004 certification by March 2014. Several Divisions have progressed well with this implementation. Generation, Transmission, Group Capital: Construction Management, Eskom Enterprises, Climate Change and Sustainable Development and Sustainability Systems maintained their ISO 14001 certification status during 2013/14. Primary Energy obtained certification as at February 2014 and Distribution has made good progress in their certification drive but unfortunately did not meet the target of March 2014.

Benchmarking Environmental Performance

A benchmarking exercise was completed in 2011 comparing Eskom environmental performance with similar Eskom utilities. Eskom is best in class in terms of water use per unit sent out. With regard to the other KPI’s benchmarked particulate emission, ISO 14001 Certification and thermal efficiency Eskom compares poorly and is not aligned to international best practice. In benchmarking exercises completed in 2007 and 2010 similar results were produced. In addition Eskom performed poorly with regard to reuse of ash and the relative emissions of Sulphur dioxide compared with utilities with a similar energy mix.

Graph 6: Benchmarking of Eskom’s Relative Particulate Emissions against other Utilities
Collectively, the various events to date and change drivers within Eskom result in specific strengths, weaknesses, opportunities and threats (SWOT) for Eskom Environmental Performance as consolidated below (Exhibit:3). This SWOT analysis served as one of the starting points for Eskom’s Environmental strategy review and development of the operational plan.
## 4 Business Intelligence and Research on Environmental Management

### Exhibit 3: A Consolidate Swot Analysis – Eskom and the Environment

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Governance structures</td>
<td>• Technical performance and non-compliance</td>
</tr>
<tr>
<td>• Environmental Governance</td>
<td>• Constrained system compromises environmental performance</td>
</tr>
<tr>
<td>• Pockets of Environmental management integrated into business processes</td>
<td>• Inability to respond to changing legislation</td>
</tr>
<tr>
<td>• Environmental aspects incorporated in decision-making</td>
<td>• Shortage and loss of skilled people</td>
</tr>
<tr>
<td>• Environmental Management an Integral part of Eskom Corporate Plan</td>
<td>• Ability to implement strategies and action plans on time and within cost</td>
</tr>
<tr>
<td>• Established KPIs and performance reporting</td>
<td>• Inconsistent level of commitment on the environment across Eskom</td>
</tr>
<tr>
<td>• Approved SHEQ policy in place</td>
<td>• Integration of environmental practices into operations</td>
</tr>
<tr>
<td>• Competent skills</td>
<td>• Inadequate and ineffective communication on key environmental issues</td>
</tr>
<tr>
<td></td>
<td>• Limited funds to meet future legal requirements</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ISO 14001 certification</td>
<td>• Aging of plant</td>
</tr>
<tr>
<td>• Training and awareness</td>
<td>• Deteriorating coal quality and increasing sulphur content of coal</td>
</tr>
<tr>
<td>• Roll out of eHPUM and B2B including environmental management</td>
<td>• Constraints on natural resources (water, sorbents)</td>
</tr>
<tr>
<td>• Environmental management integrated into business processes</td>
<td>• Low reserve margin (opportunity to maintain / retrofit power stations hampered because you cannot have an outage)</td>
</tr>
<tr>
<td>• Greener/cleaner technologies available</td>
<td>• Threat of plant shutdowns due to non-compliance</td>
</tr>
<tr>
<td>• Strengthen relationships with stakeholders</td>
<td>• Threat of legal liability</td>
</tr>
<tr>
<td>• Enhance reputation</td>
<td>• Impact of climate change on execution of Eskom activities</td>
</tr>
<tr>
<td>• Reduce liabilities</td>
<td>• Funds unavailable for large scale new build, e.g. Nuclear</td>
</tr>
<tr>
<td>• Funding/resources are available to do more than is currently achieved for compliance</td>
<td>• Increasing NGO activity and related negative press</td>
</tr>
<tr>
<td></td>
<td>• Process to obtain environmental approvals</td>
</tr>
</tbody>
</table>
A further analysis of the external environment (PESTEL: Political, Economic, Social/Society, Technology, Environment, Legal and Regulatory) as it pertains to Eskom and the Environment was also performed as part of the Environmental strategy review, the consolidated results are shown in Exhibit 4 below.

**EXHIBIT 4: A CONSOLIDATED PESTEL ANALYSIS FOR ESKOM AND THR ENVIRONMENT**

| Political | • Different environmental authorities & conflicting mandates – Ministries (DEA/DWA/DMR), Provincial authorities, District Municipalities  
| | • International treaties, UN Global Compact and related initiatives  
| | • Government’s will to deliver on the environmental mandates  
| | • Government seen to support driving the green economic agenda  
| | • Slowing down of initiatives due to bureaucracy in government  
| | • Expectation on SOE’s to deliver on state priorities  
| | • SA as a driver in the international political environment |
| Economic: | • Green funding  
| | • Competition for funding  
| | • Environmental safeguards  
| | • Environmental taxes and incentives  
| | • Reduction of the cost of renewable technologies  
| | • Demand for coal resources increasing costs and lowering availability  
| | • Costs affected by cleaner technologies (positive and negative)  
| | • SA competitiveness as a result of impacts of electricity energy mix on investment and FDI  
| | • Increasing costs of electricity and impact on the economy |
| Social and Society | • Disparity between the haves and have-nots  
| | • Conservation (preservation) vs development (growth)  
| | • Public participation, Environmental activists  
| | • Eskom’s reputation and public perception  
| | • Weak local and provincial government – dependence on Eskom to deliver infrastructure beyond the electrical domain, e.g. roads and water supply  
| | • Competition for land and land use and obtaining Rights Of Way  
| | • Increase in distributed generation at the residential level |
| Technological | • More Green options and mature technologies  
| | • Focus on renewable energy  
| | • Environmental implications of technology options  
| | • Nuclear is part of the energy mix – low water use and low emissions.  
| | • Existing technologies and assets non-compliant to environmental specifications  
| | • Low water technologies  
| | • Hybrid technologies and related environmental impact |
Environmental

- Adaptation to climate change
- Known impacts related to electricity generation
- Quality of the environment - Link to human health and wellbeing
- Long term liabilities (radio-active waste, ash dumps, PCB’s, hazardous waste and asbestos)
- Need to be accountable to greater footprint – suppliers and customer environmental impact
- Ecosystem services – pay for the service you receive from the environment
- Off-sets
- Resource shortages/constraints
- Environment citizenship as a good governance/business practice
- Green movement and special interest groups

Legal and Regulatory

- Global and Local environmental policies, practices, norms
- Changing legislation in SA
- More and stricter legislative requirements
- “Leapfrog” legislation in SA
- Increased enforcement – Green Scorpions
- Personal and criminal liability
- License to operate held through many authorisations and licenses
- Obtaining authorisations and rights to land
- International environmental standards
- Increase in environmental taxes (environmental levy, carbon tax, waste water discharge)
- Lack of municipal licensed waste management sites for use by Eskom

Eskom’s strategic imperatives were also reviewed in terms of related Environmental issues and considerations; the outcome of such is show in Exhibit 5 below.
**EXHIBIT 5: ANALYSIS OF ENVIRONMENTAL MANAGEMENT IN TERMS OF ESKOM’S STRATEGIC IMPERATIVES**

<table>
<thead>
<tr>
<th>Eskom’s strategic imperatives</th>
<th>Environmental issues and considerations</th>
</tr>
</thead>
</table>
| 1 Becoming a high performing organisation | - Our safety, health and environmental performance is not up to scratch.  
- Commitment to comply with regulated standards.  
- High performing organisation - SHEQ benchmarks |
| 2 Leading and partnering to keep the lights on | - Fast tracking new build, operating plant at/beyond limits, increased operational pressure to return plant to service – increase in Environmental risks. (Operational priorities causing Environmental trade-offs). |
| 3 Reducing our carbon footprint and pursuing low carbon growth opportunities | - Changing technological and operational environment – Operational and Environmental considerations associated with these and the changing behaviours that go along with these. |
| 4 Securing our future resource requirements, mandate and the required enabling environment | - Securing these resources has Environmental impacts, for e.g. if we pursue more coal there are emissions issues – attaining land and water for our infrastructure in water constrained environment |
| 5 Ensuring our financial sustainability | - Environmental issues? |
| 6 Setting up for success | - Is the environmental issues seen as a key component to setting up for success? |
| 7 Implementing coal haulage and the road to rail migration plan | - Servitudes, other environmental considerations related to this? |
| 8 Pursuing private sector participation | - Increased risk to organisation if Environmental stewardship is not a key factor in managing the partnerships (contractor and public safety record) |

The internal and external as well as an analysis of Eskom’s strategic imperatives was considered to understand the underlying issues which needed to be addressed in order to bring about a step change in the Eskom environmental practices, performance and entrench a ZERO Harm culture.

**Key Issues drawn out from Internal and external analysis:**

1. **Leadership:**
   a. Environment performance as a priority in terms of license to operate. Decision making and actions conflict with messaging
   b. Keeping the lights on being the overriding consideration
   c. Inconsistency in environmental management and leadership across the business
   d. Performance measurement, need to determine whether appropriate KPI’s are used
2. Legal and regulatory considerations and compliance:
   a. Non-compliance and legal contraventions
   b. Threat of plant shutdowns due to non-compliance
   c. Financial implications of non-compliance
   d. Various licencing authorities

3. Resources:
   a. Shortage of skilled and competent staff
   b. Availability of funding for specific environmental projects
   c. Availability of competent and skilled environmental service providers
   d. Financial impact of compliance to environmental requirements
   e. Environmental concessions and commitment as a key component for attaining funding
   f. Deteriorating coal quality (ash & sulphur content)

4. Aging plant and inability to perform maintenance affecting environmental performance

5. Communication on the environment and reputation risks:
   a. Ineffective communication on environmental issues
   b. Lack of understanding amongst staff of environmental issues and considerations
   c. Reputation risks due to dependence on coal (Eskom as the largest emitter of GHG in Africa) and general impact on the environment
   d. Anti-coal and anti-nuclear movement gaining momentum through special interest groups – reputational impact
   e. Global move to environmental stewardship

6. Changing ministries and conflicting mandates across various sectors of government
5 STRATEGY DEVELOPMENT AND ROBUSTNESS TESTING PROCESSES FOLLOWED

This environmental management strategy was formulated through a series of strategy dialogues and workshops wherein:

- The business intelligence and business realities were analysed to arrive at the key issues.
- Strategic options and considerations were brainstormed to arrive at the overall strategy to be adopted including the treatment of related development and implementation risks.

The draft strategy was presented to operational Divisional management committees for final input and acceptance before submission to Exco in June 2014.
6 OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT STRATEGY

The primary objective of this environmental strategy is to maintain Eskom’s “license to operate” – stakeholder acceptance (e.g. public, Funders and Regulators) - which includes the following:

- Duty of care – sustainable development that includes economic, environmental and social responsibility
- Eskom reputation

It is acknowledged that Eskom has an impact to the environment and therefore as a corporate citizen has a responsible for environmental duty of care and must take reasonable measures to prevent pollution or degradation from occurring, continuing or recurring.

This strategy is set out in the following context:

- **Eskom Purpose**: “To provide sustainable electricity solutions to grow the economy and improve the quality of life of people in South Africa and the region”
- **One of the 8 Eskom Strategic Imperatives**: “Reducing Eskom’s environmental footprint and pursuing low-carbon growth opportunities”
- **One of the 6 Eskom Values**: Zero harm
- **One of the 5 2013/14 focus areas**: License to Operate (Regulatory and Legal Compliance)

Eskom’s 6 Environmental Objectives:
1) **Informed decision-making** to avoid harm to the natural environment

2) Achieve **legal compliance** to environmental legislation as a minimum requirement

3) **Reduce particulate and gaseous emissions** to minimize the impact on human health

4) **Reduce fresh water usage and avoiding liquid effluent discharge** to avoid impacting water resources

5) Enhance efficiency of waste management through **reduction, reuse and recycling**

6) Minimize the impact of our activities on ecosystems and **enhance ecosystem services** through **responsible land management practices**
7 ENVIRONMENTAL MANAGEMENT STRATEGY:

1. Informed decision-making to avoid harm to the natural environment, minimising financial and legal liabilities through effective leadership, the appropriate structure and with competent skills.
   a. Implement the environmental strategy and operations plan ensuring good governance which enables effective leadership and execution in environmental management.
   b. Review the departmental and divisional environmental structures given the reduction in skills available but increasing environmental risks.
   c. Centre led structure with environmental centers of excellence
   d. Competencies and skills linked to job profiles
   e. Train, develop and retain the required competence and skill set to enable and in support of our objectives.
   f. Zero harm focus – the first Eskom value that needs to change behavior

2. Achieve legal compliance to environmental legislation as a minimum requirement in all activities through effective management systems, monitoring, reporting and research.
   a. Develop, implement and maintain ISO 14001: 2004 environmental management systems
   b. Adopting other environmental standards to ensure continual improvement
   c. Implement the environmental compliance plan (aligned with the Eskom compliance framework) to ensure environmental risks are minimised and full compliance to legal and other requirements
   d. Reporting and monitoring which ensures data integrity, awareness of risk, informed decision-making
   e. Research which is aligned to the environmental strategy

3. Reduce particulate and gaseous emissions to minimise the impact on human health and complying with regulated emission standards.
a. Implement the air Quality strategy and achieve reduced relative emissions of nitrogen oxides, sulphur dioxide, particulates, and fugitive emissions.

b. Explore the possibility of implementing household emission offsets to achieve a greater improvement in ambient air quality.

c. Postponements of the Minimum Emission Standards are to be applied for in cases where it is not possible to retrofit a power station to achieve the standards.

d. Development of an appropriate mercury emissions plan.

Note: Greenhouse gas emissions addressed in Climate Change strategy.

Exhibit 6: Retrofit plan to improve air quality
4. Reduce fresh water usage and avoiding liquid effluent discharge to avoid impacting water resources, including groundwater through effective water management processes and the use of mine water.
   
a. Reduced water use per MW/h Sent out (Relative reduction in Fresh Water usage as per water strategy.
   
b. Implementing Water Conservation and Water Demand Management strategy/projects.
   
c. Aligning and supporting governments Water Conservation Water Demand Management strategy (WCWDM).
   
d. Achieving blue and green drop certification by March 2016 for existing plant and March 2017 for new build.
   
e. Develop and implement ground water management strategy and compliance plan.
Graph 9: Long term reduction in water consumption

5. Enhance efficiency of waste management through reduction, reuse and recycling.
   a. Waste management practices, disposal and reporting to be enhanced through the
ten development and implementation of Waste Management Plans.
   b. The utilisation of gypsum and ash to be increased through introducing appropriate
governance and implementation mechanisms.
   c. Polychlorinated Biphenyl's (PCB) phase out by 2023.

6. Minimise the impact of our activities on ecosystems and enhance ecosystem services
   through responsible land management practices.
   a. Reduce our impact on wildlife mortalities through risk identification, research and
technological influences.
   b. Biodiversity – no biodiversity loss due to Eskom.
   c. Building biodiversity knowledge and skills throughout the organisation through training and
increased communication.
   d. Identify opportunities to enhance biodiversity on Eskom properties.
   e. Use effective strategic partnerships to reduce and manage impact on ecosystems to achieve
measurable environmental improvements.
f. Integrate biodiversity conservation philosophies into business processes by developing and implementing appropriate tools and mechanisms.

Assess Eskom properties to identify biodiversity risks to ensure legal compliance.

7.1 Overall theme for this strategy:

In order to achieve the objectives set out earlier in this document, the Environmental Management Strategy will utilise the following approach:

“Reducing the Eskom environmental footprint and achieving Zero Harm”

7.2 Assumptions and critical success factors

7.2.1 Assumptions in areas that can be influenced by Eskom

We make the following assumptions regarding our current environment and in relation to this strategy:

- Increased environmental taxes (i.e. environmental levy, carbon tax, waste water discharge) coming into place
- Eskom will implement and monitor the effectiveness of the corporate plan and strategy.
- Air quality standards have been published; Eskom will be required to meet these standards. Eskom will not be able to comply with all the emission standards at all its power stations and will seek postponements and in some circumstances, exemptions from the emissions standards where the standards cannot be met.
- Waterberg area is a growth area in terms of coal resources,
- Non-compliance to current emission license requirements will continue to constrain production and requires appropriate management, and where necessary advocacy, to reduce this risk.
- The need for close co-operation with Department of Water Affairs regarding water security. South Africa is a water scarce country, it is in Eskom’s interest to ensure the efficient use of
water and to engage with other parties to find ways to clean up polluted water and make it available for other uses including electricity Generation.

- Risks associated with the management of mine water will impact on power station activities and resource availability.

- Waste management legislation was promulgated in 2009, associated regulations are promulgated or in draft form. An appropriate strategy and action plan to ensure compliance now and in the future is required.

- There are opportunities for increased utilisation of ash from operating stations and a need to prepare new power stations for maximum utilisation of ash and gypsum

- Biodiversity and ecosystems will be protected through the concept of “ecosystems services”.

- Licensed waste management sites are no longer accessible due to poor management or lack of local government resources.

- The new build programme will continue to be a focus area in Eskom. Environmental Authorisations are required for this programme to progress.

Key assumptions in areas beyond Eskom’s control

- Increased influence by Non-governmental Organisations (NGO’s) on government to ensure that Eskom complies.

- Eskom will be allowed to build nuclear.

- Minimum emission standards will have to be complied with except in cases where natural resources are limited, financial resource constraints are unlikely to influence the requirement to comply.

- Decisions on the implementation of the Integrated Resource Plan related to implementation of Nuclear and Coal will impact on the need or timing of Environmental Authorisations for these projects.

- Eskom will come under heightened pressure for environmental due diligence through agencies funding operational and new build projects.

- Policing for compliance will be more stringent with time.

7.2.2 Critical success factors
Critical success factors are elements that are vital for a strategy to be successful. A critical success factor drives the strategy forward; it makes or breaks the success of the strategy, (hence “critical”).

The Critical success factors for this strategy are as follows:

- Effective development and implementation of stakeholder engagement plan that is purpose driven
- Engage with relevant Government Departments with a view to achieve strategic alignment between the mandates of Water and Environmental Affairs, the Department of Energy and our shareholder Department of Public Enterprise specifically with regard to:
  - Full compliance to environmental legislation current and future;
  - Keeping the lights on;
  - An electricity tariff which is aligned to South Africa’s electricity plan and economic policies; and
  - Identifying opportunities to contribute further to the Presidential Infrastructure Coordinating Commission (PICC) Infrastructure Plan and the Strategic Integrated Projects (SIPs).
- Budget approval (and reflected in tariff) for air quality and water management strategic investments
- Active senior management support – walking the talk around the importance of environmental issues
- Each Eskom employee becomes an environmental custodian through a sustained cultural change programme.
- The integration of environmental considerations in all business operational processes.
- Environmental criterion embedded in business decisions with relative equal standing (environmental boundaries that cannot be violated).
- Skilled teams in place and numbers meet requirements.
- An empowered workforce is in place to work with and implement the strategy:
  - Accountable
  - Responsible
  - Educated on strategy
- Financial resources are in place to enable meeting statutory requirements.
- Alignment of Eskom governance structures with the environmental strategy.
- Meeting environmental performance targets.
- Connecting
7.3 Strategic Initiatives

Focus area

Behavioural research points to the fact that people do not act, react or respond to anything unless they somehow internalise the subject matter or issues at hand. Protection of the environment and compliance with environmental legislation needs to be well understood and internalised in order to achieve the necessary commitment and action throughout the organisation.

Finding ways to ensure that environmental, management is integrated into day to day and decision making processes

Getting personnel to connect and ensure that the protection of the environment is integrated into activities and business decisions will be achieved through the following actions:

- ZERO Harm to the environment is to become an entrenched value in Eskom through change in behaviour.
- ZERO Harm campaigns which aim to personalise occupational health and safety and environmental management both with employees is being rolled out across the organisation. Through the campaign all levels of staff will be engaged, involved and taken through a process to internalise and live the ZERO Harm value.
- Story telling:
  - Examples of good environmental practice and bad practice with related outcomes; and
  - Minimum legal requirements and best practice initiatives as a path way to achieving zero harm to the environment will be communicated.
- Visible felt leadership on environmental protection, reduction of the environmental footprint and compliance.
- Environmental messaging to be communicated to staff in the various official languages.

Attaining commitment
Executive management has made commitments to address environmental harm and to comply with current and future standards. This commitment needs to be reflected through the implementation of key projects identified during the strategic planning and through the decisions and actions of executive and senior management. In parallel, environmental best practice will be shared across the business through the zero harm road shows.

Focus area
The achievement of a greener Eskom and a reduced environmental footprint in the short, medium and long term.

How will this be implemented?

Leadership: The direction and oversight for environmental performance comes from the most senior levels of management. Best-practice environmental standards are in place, but leadership have to strengthen their understanding and enforcement of these. There is a need to increase the skills and knowledge base of environmental issues at senior, middle and supervisory management levels through governance structures, roles and responsibilities and job profiles. Managers and supervisors will lead by demonstrating their own adherence to environmental legal requirements on a daily basis and moving Eskom towards 100% legal compliance and in the future to an exemplary leader in environmental practices.

Governance: The appropriate governance structures need to be in place to effect commitment in the organization

- Environmental Governance structures to be revised and confirmed.
- The following steering committees were initiated from April 2013:
  - Eskom Environmental Steering Committee;
  - Incident Classification Committee;
  - Ash and Gypsum Steering Committee;
  - Water Steering Committee;
  - Environmental Impact Assessment Working Group;
  - Training Working Group; and
  - EMS Working Group.
Organogram 1: Proposed Environmental Governance structure

- Review and revise the current environmental governance structures.

Organisation: Environmental compliance and best practice will be entrenched in the organisation as a line responsibility. Achievement of environmental compliance through a structured framework and the implementation of relevant policy and procedures. BU managers will be accountable to ensure this implementation while the Sustainability Division will implement processes to provide the support to the Operating Units and Business Units and to provide assurance to Eskom Executives. Commitment will be encouraged through the following processes:

- Building of relationships and strategic partnerships with Eskom's various stakeholders (organised labour, suppliers and contractors, environmental professionals, employees, government and non-government organisations) to drive “home” the ZERO Harm value.
Commitment, through Eskom SHE Contractor Forums, by contractors, suppliers and consultants to environmental requirements and environmental duty of care. Compliance shall be included into induction for all.

An open and transparent agreement to identify and correct non-compliant behaviours and actions

Implement a right of refusal to work in non-compliant conditions at a national level

Demonstration of commitment by implementing modifications, operating practices and in daily decision making

The continual rollout of ZERO harm campaigns

Implementation and achievement of Eskom’s Blue Flag to recognise best practices in SHE management

Compliance - a non-negotiable

Focus area

Compliance is the basis for effective environmental management and to achieve a reduction in the environmental footprint. Developing and implementing a compliance framework will assist Eskom to ensuring compliance in all activities across the business.

How will this be implemented?

Eskom aims to achieve compliance to all legal and other requirements and has initiated several activities to achieving this over the past three years including:

- Compliance framework
- Air quality strategy
- Water management strategy
- ISO 14001 Certification (by March 2015)
- Entrenchment of the Eskom Value – Zero Harm: zero environmental incidents and limiting our environmental “footprint”
- Training to develop environmental skills
- KPI’s – leading and lagging indicators around compliance
• Change in organisational culture (Transformation)
• Stakeholder engagement
• Consistent communication and sharing of lessons learned

Some improvements have been achieved through successful implementation of the above initiatives.

To achieve compliance to the minimum emission standards, the particulate emission strategy and associated Fabric Filter plant retrofits are to be implemented. The outages required for these retrofits are to be included into the Generation outage plan. When an outage has been planned for a unit and this unit also requires a FFP retrofit, the FFP retrofit should be included into the scope to avoid more than one extended outage per unit.

Water conservation and water demand management will remain a focus area. Eskom will implement a programme to achieve Blue drop (water treatment) and Green drop (sewage works) certification by March 2016. This will be a phased process with more than 50% of Eskom plants achieving certification by March 2015. The Zero liquid effluent discharge projects approved by Board in 2010 will be implemented as planned.

In terms of the key elements of Eskom’s compliance framework, the status of these in terms of Environmental compliance are summarised as follows:

• **Complete and maintained Compliance Universe**: Eskom environmental legal registers have been in place over the past 10 years as part of Eskom’s environmental management system. These identify the environmental legislation relevant to Eskom’s operation.

• **Clear assignment of Roles and Responsibilities**: these are defined through the implementation and certification of the ISO 14001 environmental management system. The gaps that exist will be addressed through the certification programme – end March 2014.

• **Monitoring Program**: achieved through the appointment of Environmental Management Practitioners and advisors through the high environmental impact areas of Eskom (Group
Capital, Distribution, Transmission and Generation) and supported by the centre led Environmental Management Department within Sustainability Division.

- **Assessments & Reviews**: Internal and external: three levels of defence including self-reviews, peer reviews and internal and external audits.

- **Breaches, exemptions & actions management**: Breaches and exemption registers maintained and captured.

- **Risk Management**: environmental legal compliance, with treatment plans as a level I risk on CURA.

- **Improvement Plans & Execution**: air quality and water management strategies, as approved at Board being implemented, addressing milestones not met.

- **Training & Development**: In place, but gaps to be addressed in terms of full extent of training required.

- **Reporting**: mature process in place. Monthly reporting of all Eskom’s legal contraventions. Reporting supported by Process Control Manuals (PCMs), procedure (32-95) and SAP EH&S module. However, mechanisms are found to be cumbersome and therefore difficult to effectively implement. The procedure 32-95 and PCM to be reviewed to ensure ease of use.

- **Compliance Profile**: The environmental compliance profile is accurately determined though the following mechanisms that are in place:
  
  - Monthly reporting against environmental legal contraventions KPI.
  - Tracking of all exemption requests.
  - Tracking of all findings and the effective closure of findings.
  - Legal input to all responses to pre-compliance and pre-directives issued to Eskom.
  - Incident Management processes and practices.
  - ISO 14001 Certification: legal compliance reviews and legal registers.

- **Assurance Reviews**: internal Risk Audit System (RAS) audits, A&F Audits, Internal Reviews, and appointment of Environmental Control, Officers on Construction projects
(ECO’s), Independent audits (conditions of authorisations) and second level reviews from CoE’s.

Whilst Eskom is making progress towards the objective of achieving full compliance the journey is not complete. Many of the initiatives which have been implemented require continued focus and entrenchment.

The compliance programme will continue to ensure full compliance to all legal and other requirements, specifically: Atmospheric Emission Licenses, Waste Licences, Water Use licences, Environmental Authorisations, biodiversity related permits and lenders requirements.

**Competencies**

Ensure that we have an optimal environmental structure/s throughout the business. Structures are to be resourced with the required competencies and number of staff to deliver on the environmental mandate.

**Focus area**

The environmental competencies in terms of qualifications (education), experience, and ability to apply in the job (at all levels) so as to achieve the environmental objectives in the workplace will be defined and integrated in all job designations and technical training programmes and interventions. This includes the engineering and project management skills required for the implementation of pollution abatement equipment and relevant mitigation measurements.

Initiatives and specific actions will be implemented to attract, develop and retain the necessary skilled resources to effectively deliver World Class environmental management programmes that achieve environmental compliance and reduce the environmental footprint.

**How will this be implemented?**

- Establishing an Eskom environmental training working group to:
  - Ensure a standard set of skills and knowledge requirements within environmental practitioners job/task profiles.
  - Identify relevant training needs to meet set skills and knowledge requirements.
- Put in place the necessary quality assurance systems to pre-screen, continuously assess and advise on the standard, quality and efficacy of training programmes and trainers.
- Accredit the in-house environmental training programmes.
- Conduct regular assessments of environmental staff with a view to identifying and then putting in place the necessary training interventions to fill the competency gaps of the environmental management functionaries. Conceptualise and implement an on job environmental coaching programme for all levels (e.g. Resource Pool of coaches and mentors available).
- Encourage the professional registration of all environmental staff with SACNASP.
- Work with training service providers in the development of curriculum that meet Eskom’s needs.

**Focused training (specific task or job related)**
- Developing the training matrix.
- Standardised approach to environmental graduate in training (GIT) training and development.
- Use of the Individual Development plan to enhance skills and address gaps.
- Standardise task grading of environmental resources (e.g. officers, practitioners, advisors, etc.).
- Make use of Talent Boards prior to recruitment process.
- Simulated / scenario based training.
- Use of various delivery mechanisms for training (e-learning, class room, etc.).
- Consideration and overcoming the barriers to training (language, literacy, etc.).

- Environmental management included as a key aspect of the Eskom induction programme.
- Aligning with the latest developments in the environmental field (national/international) and linking to the competency requirements.

**Consistency of actions and decisions**

**Focus area**
To achieve consistency in our actions and decisions environmental practices will be standardised as far as possible within Eskom Holdings SOC Limited and subsidiaries.

**How will this be implemented?**

Through the governance structure and committees responsible managers will ensure that there is consistency across the organisation, this will include:

- Criteria for investment decision sign-off.
- The corporate planning process.
- Strategy development and review process.
- Roles and Responsibilities.
- Monitoring processes and systems.
- Developing and implementing management systems.
- Policies and procedures.
- Performance contracts.
- Rewards and Recognition processes/procedure.
- Training, coaching and mentoring.
- Reporting against key performance indicators

It is recognised that informed decision-making needs to be undertaken based on ensuring Eskom’s overall achievement of sustainable development. This requires ensuring decisions and actions are taken in the context of sustainable development and therefore trade-offs are need to be made between economic, environmental, social and technical aspects.

**Communicating and entrenching the Environmental Strategy**

**Communicating** what environmental management is and how Eskom can reduce the environmental footprint in a manner that entrenches and re-enforces the ZERO Harm value.

This will be done in order to ensure that:

- Employees understand our environmental strategy to ensure participation, alignment and consistency.
- We have a consistent approach for implementation.
- We initiate conversation and participation which will improve ownership.
• We communicate our plans and successes internal and external to the business.
• Employees understand the value that environmental management adds to the environment in which they exist and the sustainable future of South Africa and Eskom.

Focus area
The focus of communication will be on every single employee within Eskom Holdings SOC Limited and its subsidiaries, including Contractors.

How will this be implemented?
This will be implemented by:

• Crafting a communication plan upfront, on an annual basis.
• Defining clear communication objectives.
• Identifying and utilising targeted communication methods for specific audiences (e.g. posters, pictures, banners and videos), text messages, websites, intranet, and social media.
• By translating some of the communication into the predominant language in that area e.g. Afrikaans, Sesotho or Zulu.
• Conducting road shows about the value of Zero Harm to ensure that employees understand what it means and the benefit of achieving it.
• Communicating the environmental message through the celebration of relevant national priorities such as wetlands day, water week, environmental week and arbour week etc.
• Considering effective channels to convey the different messages.
• Using the right skill to communicate and convey the message and its importance.

Continuous improvement, tracking, monitoring and assurance
Ensuring that we have a cycle of continuous improvement, tracking and monitoring in Environmental management through the development of appropriate KPA’s, KPI’s and pro-active shaping and safeguarding processes.

Focus area
The focus of continuous improvement is to embed the necessary processes, systems and routines in the organisation to achieve continuous improvement. The focus being on air quality, water
management practices, enhancing and protecting biodiversity, reducing waste streams, obtaining and complying with environmental authorisations, permits and licenses and effecting reporting and monitoring in each of these areas.

How will this be implemented?

- This will be achieved through a three tire approach as set out below. Environmental compliance will be address through a number of mechanisms, including the way we manage incidents, having recognition programmes like Blue Flag and Green Drop to ISO 14001 certification. The compliance framework within Eskom together with the integrated risk management approach provides additions mechanism in achieving disciplined compliance.

Figure 1: Environmental Compliance framework

Eskom’s approach to combined assurance reflects three lines of defence. The diagram below illustrates examples for the three lines of defence with regard to environmental assurance leading to compliance.
7.4 Stakeholder engagement and Advocacy plan

Key to the success of this strategy is buy-in and adoption of this strategy (in some cases specific components of this strategy) from the following stakeholder groupings:

- The Eskom executive
- The Eskom management
- Environmental regulatory authorities
- Environmental NGOs
- Contractors, services providers and consultants to Eskom
- The general public
The advocacy plan to attain the required support and commitment from the above groupings is as follows:

The Eskom environmental strategy cannot be achieved in isolation. There are many key role-players that need to be engaged pro-actively internal and external to the business. Engagement with stakeholders will be purpose driven and contribute to the achievement of Eskom’s strategic environmental objectives as set out in this strategy.

**Focus area**

The purpose of an environmental stakeholder strategy is to:

- Be accountable to our stakeholders
- Allow for informed decision-making
- Better management of risk and reputation
- Collective thinking to solve problems and achieve objectives
- To understand the impact of ones decisions and performance on others – and to respond
- Transfer of information and knowledge
- Building trust

**How will this be implemented?**

To develop and communicate an effective communication mechanism for internal engagement. Establish an effective engagement mechanism between Eskom and external stakeholders. The focus on Government and Non-Governmental Organisations (NGOs).

Engagement with stakeholders will be purpose driven and contribute to the achievement of Eskom’s vision and strategic objectives. Eskom’s stakeholder relationship management shall be undertaken with an inclusive approach, whereby the legitimate interest and material issues of key stakeholders are identified, considered and expectations managed to foster a shared understanding of business drivers.

This approach will provide a platform for informed decision-making while acting in the best interest of South Africa, without compromising Eskom’s future sustainability.

The approach to stakeholder engagement shall be based on the following principles:

**Commitment to Accountability**
• Transparency: accounting to stakeholders regarding material issues.

Compliance: complying with legal requirements, standards, codes, principles and policies.

Commitment to Inclusivity

• Identify material issues of concern, sharing expectations, views and opinions to explore different perspectives, needs and strategies to address an issue or initiative and accepting an obligation to account to relevant stakeholders.

Commitment to Materiality

• Materiality is the process of determining the relevance and significance of issues to both Eskom and its stakeholders. Materiality of issues concerns the legitimate interest and expectations of stakeholders in context of the Eskom environmental strategy, objectives and operations.

Commitment to Responsiveness

• Commitment to coherently and consistently respond appropriately to stakeholder issues through decisions, actions and performance, as well as communication with stakeholders.

Commitment to Completeness:

• It is the understanding of stakeholder concerns that include views, needs, performance expectations and perceptions associated with their material issues.
Table 2: Stakeholder Engagement Matrix

<table>
<thead>
<tr>
<th>Purpose of Stakeholder engagement – achievement of Eskom’s environmental Objectives</th>
<th>Key Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informed decision-making to avoid harm to natural environment</td>
<td>1) DEA: Chief Directorate - Integrated Environmental Authorities. 2) DWA, Parks, Mico. 3) DEA: Chief Directorate - Hazardous Waste Management and Licensing. 4) Lulio Makanjane. 5) SAHRA. 6) NGO’s</td>
</tr>
<tr>
<td>Legal compliance</td>
<td>1) DEA: Chief Directorate - Compliance. 2) Air Quality Management: Dr. Thuli Mthuli, Provincial and District Managers. 3) NGO’s. 4) PSCC (through SAPs coordinating offices).</td>
</tr>
<tr>
<td>Reduce air emissions</td>
<td>1) DEA: Chief Directorate - Air Quality Management: Dr. Thuli Mthuli, Provincial and District Managers. 2) NGO’s.</td>
</tr>
<tr>
<td>Reduce water usage and discharge</td>
<td>1) DWA: Water Research Center (WRC). 2) NGO’s.</td>
</tr>
<tr>
<td>Waste reduction, reuse, and recycling</td>
<td>1) DEA: Chief Directorate - Water Research Center (WRC). 2) NGO’s.</td>
</tr>
<tr>
<td>Enhance ecosystem services</td>
<td>1) DEA: Chief Directorate - Biodiversity. 2) SANBI. 3) EWT. 4) BirdLife SA. 5) Middlepunt Wetland Trust. 6) NGO’s.</td>
</tr>
</tbody>
</table>

This will be implemented through the relevant Environmental CoE’s in addressing the CoE’s priorities.

Focus on:

- Government and agents of government – DPE, DWA, DMR, DEA, DAFF, SAHRA, SANBI and Provincial and District competent authorities
- Non-Governmental Organisations (NGOs) – EWT, Birdlife SA, Middlepunt Wetland Trust, WESSA, WWF, Earth Life Africa, Greenpeace, Vulpro
- Associations and professional bodies such as: Power Institute for East and Southern Africa (PIESA), Cigre, Southern African Power Pool (SAPP), SACAA, IAIA, NACA, SACNASP
8 CAPABILITY ASSESSMENT

The organisational capability to deliver on this strategy vests within the Environmental Management sections of the Sustainability Systems department in the Sustainability Division and the operating units. Based on the current skills set and resources within the organisation there are generally sufficient human resources to implement the strategy. Distribution is currently reviewing its resources to confirm that the resources are adequate.

8.1 Staffing, Skills and competencies

The organisation structure as it specifically relates to the Environmental focus area is shown below. A needs analysis is required to confirm the skills requirements at Operating Unit and Business Unit to ensure the efficient and effective implementation of this strategy.

Organogram 2: The organisational structure as it pertains to the Environmental Management Department – Sustainability Division

Table 3: The current and required skills and competencies within the above structure
### Centre of Excellence

<table>
<thead>
<tr>
<th>Centre of Excellence</th>
<th>Current skills</th>
<th>Required skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air quality</td>
<td>Middle Manager S17 – adequate skills</td>
<td>Senior advisor P15 – skills required include: knowledge of air quality legislation; understanding of emission and ambient monitoring and data.</td>
</tr>
<tr>
<td></td>
<td>Advisor T12 – appointed in 2012/13 – adequate skills</td>
<td></td>
</tr>
<tr>
<td>SEA/EIA and Advisory</td>
<td>Middle Manager, M17; Senior Environmental Advisor, P15 (x2); Environmental Advisor (P12) – this position should not be there in the future (if the current person gets promoted)</td>
<td>Senior Environmental Advisors (x2), P15: clear knowledge of EIA legislation; knowledge of EIA/WML process; experience with implementation and/or management of an EIA/WML process; good interpersonal skills; good teamwork experience.</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Full complement of staff sufficiently skilled.</td>
<td>N/A</td>
</tr>
<tr>
<td>Waste</td>
<td>Senior Advisor</td>
<td>Vacancy for Chief Advisor to be appointed in 2013/14. Requirement for additional positions to focus on Gypsum and ash utilisation.</td>
</tr>
<tr>
<td>Assurance, reporting and systems</td>
<td>Middle Manager, M17; Chief Advisor P17 Senior Environmental Advisor, G5 (x2); 11 GITs</td>
<td>T12 Environmental Officer appointed in 2013/14. G15 Senior Environmental Advisor position filled in 2013/14.</td>
</tr>
</tbody>
</table>

### Current and Required Process and systems
The current Environmental related processes and systems which are in place are as follows:

- ISO 14001 is being implemented across the organisation. Several areas of the business have achieved ISO 14001 certification.

- SAP Environmental Health and Safety (EH&S) system was introduced for the reporting of environmental incidents in 2011/12.

- Environmental legal register in place to link Eskom activities to environmental legal requirements.

- Several different systems exist for the tracking of findings and the close out of findings from internal and external reviews and audits. These systems are not fully effective but do assist with tracking close out of non-conformance to some degree.

For this strategy to materialise the following additional processes and systems are required:

- ISO 14001 Certification must be achieved by all relevant Business Units as outlined under the objectives.

- Development of an Environmental Management capability (based on ISO 14001) PCM for Eskom business.

- Implementation of phase 2 of the Eskom SAP EHS programme to complete the gaps identified during the roll out of phase 1 of the implementation of SAP EHS.

- The roll out of SAP EHS into other areas of environmental Management such as waste management.

- Waste reporting and monitoring of phase out of asbestos & PCB across the business with timelines of 2033 and 2025 respectively.

- Standardising of Environmental resources task grading and recruitment processes

- Collating Eskom's environmental expenditure figures.

- Clarification of roles and responsibilities, and linkages among all the environmental players.
8.2 Funding considerations

Air Quality Strategy:

- **CAPEX costs for full compliance** with the Minimum Emission Standards are estimated to be **R209 billion** in real (overnight) terms. OPEX costs for the flue gas desulphurization are estimated to be R6 billion.

- **CAPEX costs for the emission reduction interventions** that Eskom has committed to in the postponement applications are **R44 billion** in real terms.

- **Associated OPEX costs are R0.9 billion** (for Medupi FGD). The authorities may refuse some of the postponement applications, in which case the CAPEX and OPEX costs of compliance will be higher.

- **CAPEX costs for emission reduction interventions included in the approved Tech Plan** for the MYPD3 period (until end of FY2018) are **R9 billion** in nominal terms (about **R7 billion** in real terms)

- There are risks that the postponement applications will not be successful; that longer term exemption from the Minimum Emission Standards will not be obtained; that project delays will result in non-compliance; and that the large amount of funding for retrofits required in the MYPD4 window (about R37 billion in 2013 real terms, versus Generation's total MYPD3 budget of R33 billion in nominal terms) will not be obtained.

Water Management Strategy

- Implementation of the strategy for ensuring full compliance to the relevant legislation is projected at **R2 billion**

- Implementing Water Conservation and Water Demand Management (WCWDM) strategy/projects is depended on the approved projects which will be implemented over a five year window. The **projected costs <R1b**.

- Develop and implement the “**blue and green drop**” system to achieve certification by March 2016 is R0.5M per power station excluding refurbishment costs of the associated infrastructure. Projected cost ~ **R7.5 million**

- Develop and implement ground water management compliance plan. The gap analysis of groundwater and development of the groundwater framework at all Eskom sites is projected at a cost of **R3m**. The costs for closing–out of actions would need to be quantified.
Table 4: The current and required funding and budget

<table>
<thead>
<tr>
<th>Type of funding</th>
<th>Current funding</th>
<th>Required funding for length of strategy</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opex</td>
<td>60,179,807</td>
<td>73,036,550</td>
<td></td>
</tr>
<tr>
<td>Capex</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60,179,807</td>
<td>73,036,550</td>
<td></td>
</tr>
</tbody>
</table>

The Environment department within the Sustainability division will cater for national environmental programmes and initiatives.

The Environment specific initiatives in the divisions and operating units are to be catered for in their respective budgets.
9 **COMPLIANCE AND ALIGNMENT WITH KEY ESKOM-WIDE STRATEGIES**

In executing this strategy, the following Eskom wide strategies will be complied with:

- Supplier development and localisation
- Eskom Branding strategy
- Internal and External communication
- Climate change adaption strategy
- Stakeholder management strategy
- Integrated reporting

This strategy is a key consideration to and must be complied with by the following strategies:

- All Eskom strategies
10 RISKS, TREATMENT PLANS, CONTINGENCY PLANS AND IMPLICATIONS OF ACTIVITIES ON ESPOM

The risks associated with this strategy have been identified and treatment plans developed using the Eskom Integrated Risk Management (IRM) processes and the identification of environmental aspects and impacts as per ISO 14001 Environmental Management System Standard.

The following planning parameters are taken into account in the determination of Eskom’s environmental risks:

- Air quality standards have been published; Eskom will be required to meet these standards. Eskom will not be able to comply with all the emission standards at all its power stations and will seek postponements and in some circumstances, exemptions from the emissions standards where the standards cannot be met.

- Non-compliance to current emission license requirements will continue to constrain production and requires appropriate management, and where necessary advocacy, to reduce this risk.

- The need for close co-operation with Department of Water Affairs regarding water security. South Africa is a water scarce country, it is in Eskom’s interest to ensure the efficient use of water and to engage with other parties to find ways to clean up polluted water and make it available for other uses including electricity Generation.

- Risks associated with the management of mine water will impact on power station activities and resource availability.

- Waste management legislation was promulgated in 2009, associated regulations are promulgated or in draft form. An appropriate strategy and action plan to ensure compliance now and in the future is required.

- Licensed waste management sites are no longer accessible due to poor management or lack of local government resources.

- There are opportunities for increased utilisation of ash from operating stations and a need to prepare new power stations for maximum utilisation of ash and gypsum.

- Increased influence by Non-governmental Organisations (NGO’s) on government to ensure that Eskom complies.
- Eskom will come under heightened pressure for environmental due diligence through agencies funding operational and new build projects.
- Policing for compliance will be more stringent with time.

Below are the two lists of the high level risks identified to date through the IRM process and ISO 14001 processes respectively.

Exhibit 7: Eskom’s IRM Environmental Risk

Exhibit 8: Environmental risks as per identification of environmental aspects and impacts
### Challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor management of waste disposal</td>
<td>- Storage and handling practices need to be improved. - Lack of awareness and training for staff in waste management. - Difficulty in enforcing the procurement of waste management services.</td>
</tr>
<tr>
<td>Insufficient planning and design</td>
<td>- Insufficient planning and design for waste management. - Lack of proper and licensed temporary disposal facilities.</td>
</tr>
<tr>
<td>Insufficient maintenance of waste management facilities</td>
<td>- Insufficient maintenance of waste management facilities. - Difficulty in enforcing the procurement of waste management services.</td>
</tr>
<tr>
<td>Inadequate water management strategies</td>
<td>- Inadequate water management strategies. - Lack of proper and licensed temporary disposal facilities.</td>
</tr>
<tr>
<td>Insufficient water management task teams</td>
<td>- Insufficient water management task teams. - Difficulty in enforcing the procurement of water management services.</td>
</tr>
<tr>
<td>Insufficient financial resources</td>
<td>- Insufficient financial resources. - Difficulty in enforcing the procurement of financial resources.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk</th>
<th>Control</th>
<th>Business Case</th>
<th>Key Performance Indicators</th>
<th>Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate water management strategies</td>
<td>- Improved water management strategies. - Enhanced training for staff. - Increased enforcement of procurement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient planning and design</td>
<td>- Improved planning and design. - Enhanced training for staff. - Increased enforcement of procurement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient maintenance of waste management facilities</td>
<td>- Improved maintenance of waste management facilities. - Enhanced training for staff. - Increased enforcement of procurement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inadequate water management strategies</td>
<td>- Improved water management strategies. - Enhanced training for staff. - Increased enforcement of procurement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insufficient financial resources</td>
<td>- Improved financial resources. - Enhanced training for staff. - Increased enforcement of procurement.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Water CoE

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warren Funston</td>
<td>Development and implementation of water management strategies</td>
<td>- Development and implementation of water management strategies. - Enhanced training for staff. - Increased enforcement of procurement.</td>
</tr>
<tr>
<td>Tobile Bokwe</td>
<td>Conducting gap analyses on air quality and health impacts</td>
<td>- Conducting gap analyses on air quality and health impacts. - Enhanced training for staff. - Increased enforcement of procurement.</td>
</tr>
</tbody>
</table>

### Environmental Management Strategy

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warren Funston</td>
<td>Development and implementation of water management strategies</td>
<td>- Development and implementation of water management strategies. - Enhanced training for staff. - Increased enforcement of procurement.</td>
</tr>
<tr>
<td>Tobile Bokwe</td>
<td>Conducting gap analyses on air quality and health impacts</td>
<td>- Conducting gap analyses on air quality and health impacts. - Enhanced training for staff. - Increased enforcement of procurement.</td>
</tr>
</tbody>
</table>

### Financial Loss

<table>
<thead>
<tr>
<th>Responsible</th>
<th>Task</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warren Funston</td>
<td>Development and implementation of water management strategies</td>
<td>- Development and implementation of water management strategies. - Enhanced training for staff. - Increased enforcement of procurement.</td>
</tr>
<tr>
<td>Tobile Bokwe</td>
<td>Conducting gap analyses on air quality and health impacts</td>
<td>- Conducting gap analyses on air quality and health impacts. - Enhanced training for staff. - Increased enforcement of procurement.</td>
</tr>
</tbody>
</table>
- Air Quality **emissions reduction strategy implementation cost at R8.7bn** in 5-year window
- **“Must do” projects** for asset management and environmental compliance (filter bag replacement and ash dams at Komati and Camden) **at R5.2bn**
- **Meeting National Emission Standards with 57% compliance at R72bn** up to 2050 and potential **increase to R200bn** if application for exemption not successful
- Zero Liquid Effluent Discharge (**ZLED**), waste sites, ash dams **at R4.1bn**. The plan is to implement the projects over a window period of five years. The risk is associated with the non-compliance of sites to the environmental authorizations
- Proposed **Water Discharge** legislated system resulting in potential **R200m per year** if implemented/depending on the amount of salt load which might lead to higher costs
- **Other areas**: PCB phase out, EIAs, remediation of contaminated land and closure liabilities
11 **KEY PERFORMANCE AREAS (MEASUREMENT AND TRACKING)**

The following Key Performance Areas (KPA), Key Performance Indicators (KPI) relating to this strategy constitutes the Environmental performance measures that form part of Eskom’s corporate plan.

11.1 **KPI Targets**

To secure stable and consistent execution of the Eskom Environmental Management priorities across the whole organisation, transparency on the progress will be ensured via a set of key performance indicators (KPI). Targets have been defined for financial years 2014/15 – 2017/18 and are listed in table 4.

**TABLE 5: ESKOM’S ENVIRONMENTAL MANAGEMENT STRATEGY KPA’S AND KPI’S FOR THE PERIOD 2014/15 TO 2017/18**

<table>
<thead>
<tr>
<th>KPI</th>
<th>2014/15</th>
<th>2015/16</th>
<th>2016/17</th>
<th>2017/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 14001</td>
<td>Attain certification for Dx and maintain certification for other divisions</td>
<td>Attain certification for ERE and maintain Certification for other divisions</td>
<td>Maintain Certification</td>
<td>Maintain Certification</td>
</tr>
<tr>
<td>Environmental Training</td>
<td>Environmental training plans with targets established</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
</tr>
<tr>
<td>Eskom off-sets position</td>
<td>Eskom position</td>
<td>Pilot project (air quality and biodiversity)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction in Eskom’s environmental legal contraventions</td>
<td>35</td>
<td>32</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>Legal contraventions in terms of the OHD</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Postponement from MES</td>
<td>Successful application for postponement from MES</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point source air quality monitoring</td>
<td>Installation of equipment 80% reliable and accuracy of data</td>
<td>Maintain 80% reliable and accuracy of data</td>
<td>Maintain 80% reliable and accuracy of data</td>
<td>Maintain 80% reliable and accuracy of data</td>
</tr>
<tr>
<td>Ambient air quality monitoring</td>
<td>SANAS accreditation of stations</td>
<td>Maintain accreditation</td>
<td>Maintain accreditation</td>
<td>Maintain accreditation</td>
</tr>
<tr>
<td>Air quality off-sets</td>
<td>Pilot research funded</td>
<td>Completion of off-sets pilot research</td>
<td>Implementation of off-sets</td>
<td>Implementation of off-sets</td>
</tr>
<tr>
<td>Particulate emissions</td>
<td>0.35</td>
<td>0.34</td>
<td>0.32</td>
<td>0.30</td>
</tr>
<tr>
<td>Specific water use</td>
<td>1.39</td>
<td>1.38</td>
<td>1.37</td>
<td>1.36</td>
</tr>
<tr>
<td>Blue and Green Drop certification</td>
<td>50% of plants achieving certification</td>
<td>100% of plants achieving certification</td>
<td>Maintain certification</td>
<td>Maintain certification</td>
</tr>
<tr>
<td>Industry Waste Management plan</td>
<td>Developed and in place. Gx targets are: 15% ash recycled; 100% oil recycled</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
</tr>
<tr>
<td>PCB phase-out</td>
<td>Plan for the phase out of PCB’s</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
<td>Implement and achieve plan deliverables</td>
</tr>
<tr>
<td>Ash utilization</td>
<td>2.2 MT (6%)</td>
<td>3.6 MT (10%)</td>
<td>7.2 MT (20%)</td>
<td>10.8 MT (30%)</td>
</tr>
<tr>
<td>Gypsum utilization</td>
<td>Gypsum utilization commercial strategy in place</td>
<td>Targets to be set based on strategy outcome</td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------------</td>
<td>---------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of mortalities of protected bird species</td>
<td>Reduction and % of wildlife interactions mitigated within four months 85% Dx, 70% Tx</td>
<td>New measures to be developed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opportunities to enhance biodiversity on Eskom properties</td>
<td>Proclamation of Ingula Nature reserve</td>
<td>Measures to be developed based on biodiversity plans for Eskom land</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12 APPROVAL PROCESS TO BE FOLLOWED:

The environmental strategy is a crucial cross cutting Strategy that applies across the organisation and as such the following approval process needs to be followed:

- Step 1: Strategy to be endorsed by the GM: Sustainability Systems
- Step 2: Strategy to be endorsed by Strategy and Risk Management
- Step 3: Strategy communicated to Divisions and final input received
- Step 4: Strategy to be jointly endorsed by the Group Executive – Sustainability Division and Group Executive – Enterprise Development for submission to the Eskom EXCO for Approval.
### 13 ABBREVIATIONS, GLOSSARY AND TERMS

**Supporting documentation**

<table>
<thead>
<tr>
<th>Reference</th>
<th>TITLE: POLICIES</th>
<th>Applicability</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPL 32-727</td>
<td>Eskom Safety, Occupational Health, Environmental and Quality Policy</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>EPL32-419</td>
<td>Atmospheric Emission Management Policy</td>
<td>Generation</td>
<td>current</td>
</tr>
<tr>
<td>EPL 32-97</td>
<td>Land Management Policy</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>EPL 32-1163</td>
<td>Eskom Water Management Policy</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>ESG32-1143</td>
<td>Air Quality Strategy</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>240 27689003</td>
<td>EIC Terms of Reference</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>240 67689113</td>
<td>ESC Terms of Reference</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>474-187</td>
<td>Standard for Emission Monitoring and Reporting</td>
<td>Generation</td>
<td>current</td>
</tr>
<tr>
<td>EPC 32-303</td>
<td>Requirements for the safe processing, storing, removing and handling of asbestos or asbestos containing materials</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>EPC 32-245</td>
<td>Waste Standard and Annexures</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>240-70172585</td>
<td>Vegetation Management and Maintenance within Eskom Land, Servitudes and rights of way Standard</td>
<td>Engineering</td>
<td>Current</td>
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<tr>
<td>EPC 32-258</td>
<td>Environmental and Social Due Diligence Procedure</td>
<td>Eskom wide</td>
<td>current</td>
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<tr>
<td>EPC 32-249</td>
<td>Environmental KPI Reporting Procedure</td>
<td>Eskom wide</td>
<td>current</td>
</tr>
<tr>
<td>EPC 32-246</td>
<td>Reporting on Environmental Expenditure Procedure</td>
<td>Eskom wide</td>
<td>Under review</td>
</tr>
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</table>

**Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviations</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>--------------</td>
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<tr>
<td>DPE</td>
<td>Department of Public Enterprises</td>
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<tr>
<td>EAL</td>
<td>Eskom Academy of Learning</td>
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<tr>
<td>EXCO</td>
<td>Executive Committee</td>
</tr>
<tr>
<td>IRM</td>
<td>Integrated risk management</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicators</td>
</tr>
<tr>
<td>LTIR</td>
<td>Lost-time incidence rate</td>
</tr>
<tr>
<td>MW</td>
<td>Megawatt</td>
</tr>
<tr>
<td>NERSA</td>
<td>National Energy Regulator of South Africa</td>
</tr>
<tr>
<td>OHS</td>
<td>Occupational Health and Safety</td>
</tr>
<tr>
<td>PESTEL</td>
<td>Political, Economic, Social, Technological, Environmental and Legal (Sphere)</td>
</tr>
<tr>
<td>PFMA</td>
<td>Public Finance Management Act</td>
</tr>
<tr>
<td>SHEQ</td>
<td>Safety, Health, Environment and Quality</td>
</tr>
<tr>
<td>SLA</td>
<td>Service Level Agreements</td>
</tr>
<tr>
<td>SOC</td>
<td>State-owned company</td>
</tr>
<tr>
<td>SOP</td>
<td>Standard Operational Procedure</td>
</tr>
<tr>
<td>t.b.d.</td>
<td>to be determined</td>
</tr>
<tr>
<td>VAT</td>
<td>Value added tax (RSA)</td>
</tr>
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</table>

**Glossary**
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Eskom Sustainability Performance Index (ESPI)</td>
<td>Index covering technical, economic, environmental and social measures to score sustainable performance.</td>
</tr>
<tr>
<td>Forced outage</td>
<td>Shutdown of a generating unit, transmission line or other facility for emergency reasons or a condition in which generating equipment is unavailable for load due to unanticipated breakdown.</td>
</tr>
<tr>
<td>Human Resources Sustainability Index (HRSI)</td>
<td>A measure of Eskom’s ability to achieve its human resources objectives.</td>
</tr>
<tr>
<td>Independent Power Producer (IPP)</td>
<td>Any entity, other than Eskom, that owns or operates, in whole or in part, one or more independent power production facilities.</td>
</tr>
<tr>
<td>Kilowatt-hour (kWh)</td>
<td>Basic unit of electric energy equal to one kilowatt of power supplied to or taken from an electric circuit steadily for one hour; one kilowatt-hour equals 1,000 watt-hours.</td>
</tr>
<tr>
<td>Lost-time incident rate</td>
<td>A proportional representation of the occurrence of lost-time injuries over 12 months.</td>
</tr>
<tr>
<td>Megawatt</td>
<td>One million watts</td>
</tr>
<tr>
<td>Megawatt-hour (MWh)</td>
<td>One thousand kilowatt-hours or one million watt-hours</td>
</tr>
<tr>
<td>Mothballed</td>
<td>Plant (i.e. power stations) placed in long-term storage.</td>
</tr>
<tr>
<td>Outage</td>
<td>The period in which a generating unit, transmission line, or other facility is out of service.</td>
</tr>
</tbody>
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**Energy terms**
**Units of power** | **Units of energy**
---|---
Power is generated per unit of time | Energy is power multiplied by time

Power is expressed in watts (W)

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<tbody>
<tr>
<td>1 kW (kilowatt) = 1,000 W</td>
<td>1 kWh (kilowatt hour) = 1 kW expended over one hour</td>
</tr>
<tr>
<td>1 MW (megawatt) = 1,000 kW</td>
<td>1 MWh (megawatt hour) = 1,000 kWh</td>
</tr>
<tr>
<td>1 GW (gigawatt) = 1,000,000 kW or 1,000 MW</td>
<td>1 GWh (gigawatt hour) = 1,000,000 kWh or 1,000 MWh</td>
</tr>
</tbody>
</table>

**Voltage**

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<thead>
<tr>
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<tbody>
<tr>
<td>1 kV (kilovolt) = 1,000 V</td>
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</table>

**Presentation currency**

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<thead>
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<tbody>
<tr>
<td>R1 million = R1,000,000</td>
<td></td>
</tr>
<tr>
<td>R1 billion = R1,000,000,000</td>
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</tbody>
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