



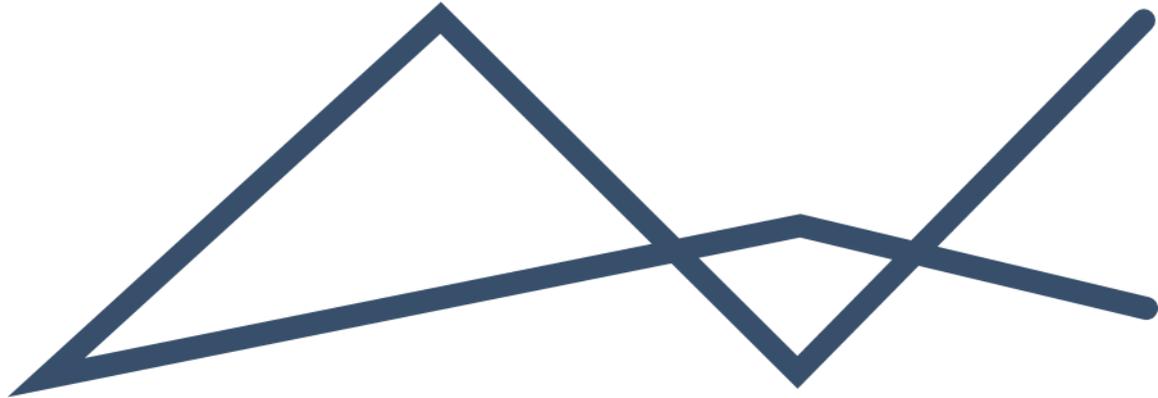
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# ENVIRONMENTAL MANAGEMENT PROGRAMME

KELVIN POWER PLANT COMBINED CYCLE GAS TURBINE PROJECT





### DOCUMENT DETAILS

**EIMS REFERENCE:** 1607

**DOCUMENT TITLE:** PROPOSED KELVIN CCGT PROJECT EMPr

**COMPANY:** KELVIN POWER (PTY) LTD

### DOCUMENT CONTROL

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### REVISION AND AMENDMENTS

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# 1 INTRODUCTION

## 1.1 REPORT STRUCTURE

This report is an Environmental Management Programme (EMPr) for the proposed Kelvin Combined Cycle Gas Turbine (CCGT) Power Plant project and is compliant with the requirements of the National Environmental Management Act (Act 107 of 1998) (NEMA) Regulations. Table 1 below provides a summary of the NEMA requirements in terms of Appendix 4 of the Environmental Impact Assessment (EIA) Regulations (GNR 982)(EIA Regulations), and an indication in which section the supporting information and documentation can be found.

Table 1: Report Structure

Environmental Regulation	Description	Section in Report
<b>NEMA Regulation 982 (2014) Appendix 4</b>		
<b>Appendix 4(1)(1)(a):</b>	Details of – <ul style="list-style-type: none"> <li>i. The EAP who prepared the EMPr; and</li> <li>ii. The expertise of that EAP to prepare an EMPr, including a curriculum vitae;</li> </ul>	Section 1.5
<b>Appendix 4(1)(1)(b):</b>	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 3
<b>Appendix 4(1)(1)(c):</b>	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Figure 2
<b>Appendix 4(1)(1)(d):</b>	A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including – <ul style="list-style-type: none"> <li>i. Planning and design;</li> <li>ii. Pre-construction activities;</li> <li>iii. Construction activities;</li> <li>iv. Rehabilitation of the environment after construction and where applicable post closure; and</li> <li>v. Where relevant, operation activities;</li> </ul>	Section 3
<b>Appendix 4(1)(1)(f):</b>	A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to – <ul style="list-style-type: none"> <li>i. Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</li> <li>ii. Comply with any prescribed environmental management standards or practices;</li> </ul>	Section 5



Environmental Regulation	Description	Section in Report
	<ul style="list-style-type: none"> <li>iii. Comply with any applicable provisions of the act regarding closure, where applicable; and</li> <li>iv. Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.</li> </ul>	
<b>Appendix 4(1)(1)(g):</b>	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 3.1
<b>Appendix 4(1)(1)(h):</b>	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 3.3
<b>Appendix 4(1)(1)(i):</b>	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 3.1 and 3.5
<b>Appendix 4(1)(1)(j):</b>	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 5
<b>Appendix 4(1)(1)(k):</b>	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 3.5
<b>Appendix 4(1)(1)(l):</b>	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 2.4
<b>Appendix 4(1)(1)(m):</b>	An environmental awareness plan describing the manner in which – <ul style="list-style-type: none"> <li>i. The applicant intends to inform his or her employees of any environmental risk which may result from their work; and</li> <li>ii. Risks must be dealt with in order to avoid pollution or the degradation of the environment; and</li> </ul>	Section 2.7
<b>Appendix 4(1)(1)(n):</b>	Any specific information that may be required by the competent authority.	N/A



## 1.2 INTRODUCTION TO THE PROJECT

Kelvin proposes to develop a CCGT Power Plant with a net output of up to 600 megawatts (MW) to be supplied to the Eskom grid. The proposed CCGT Power Plant will comprise of gas turbines, a heat recovery boilers and steam turbines. The main structures comprising the plant include a gas turbine building, steam turbine building, water treatment plant, heat recovery steam generator, mechanical draft cooling tower, Extra High Voltage (EHV) substation, exhaust stack, auxiliary buildings and administration buildings. Other possible infrastructure includes additional water and treated sewage wastewater reticulation pipelines, as well as electricity transmission lines to the City Power Sebenza substation adjacent to the power station. The proposed CCGT plant will be located at the previous A-station (coal fired power station) location, which has been decommissioned. Kindly refer to Figure 1 for the locality map showing the proposed development location.

Kelvin plans to receive Natural Gas to the CCGT plant via Sasol's gas pipeline network. A short pipeline connection will be required to connect to the Sasol gas pipeline network. It is noteworthy that various gas suppliers are currently being engaged for the supply of gas to the CCGT plant via the Sasol gas pipeline system.

The proposed development triggers various listed activities in terms of the National Environmental Management Act (Act 107 of 1998 – NEMA) Listing Notices 1, 2 and 3 and consequently a full Scoping and Environmental Impact Assessment process is being undertaken. The relevant Water Use Licence (WUL) and Air Emissions Licence (AEL) applications will be submitted for the triggers under the National Water Act (Act 36 of 1998 – NWA) and National Environmental Management Air Quality Act (Act No. 39 of 2004 as amended – NEMAQA) respectively.

**Please note this EMPr is specific to the CCGT plant itself. Please refer to the separate generic EMPrs included as part of the EIR (Appendix G2 and G3) for the Gas Pipeline Connection and Grid Connection components respectively, for specific mitigation measures with respect to those aspects of the project.**

## 1.3 DESCRIPTION OF THE PROPERTY

Table 2 indicates the farm portions that fall within the proposed project including details on the project location as well as the distance from the proposed project area to the nearest towns.

Table 2: Locality details

<b>EA Application Area (ha)</b>	The EA application area (proposed Kelvin Power CCGT plant) covers ~15 ha.	
<b>Magisterial District</b>	The proposed project falls within the Ekurhuleni North Magisterial District, Gauteng Province.	
<b>Distance and direction from nearest towns</b>	The EA Application area is situated ~4km to the west of Kempton Park CBD, 11 km east of Sandton, and ~14km south east of Midrand.	
<b>Farm Name, Number and Portion as well as 21-digit Surveyor General Code</b>	<b>Farm Name, Number and Portion</b>	<b>21 Digit Surveyor General Code</b>
	Zuurfontein Farm 33-IR portion 391 RE	TOIR00000000003300391
	Zuurfontein Farm 33-IR portion 82 RE	TOIR00000000003300082

The locality is shown in Figure 1 .

## 1.4 SENSITIVE AREAS

No “no-go” areas were identified within the proposed area for the CCGT. The sensitivity map is provided in Figure 2.

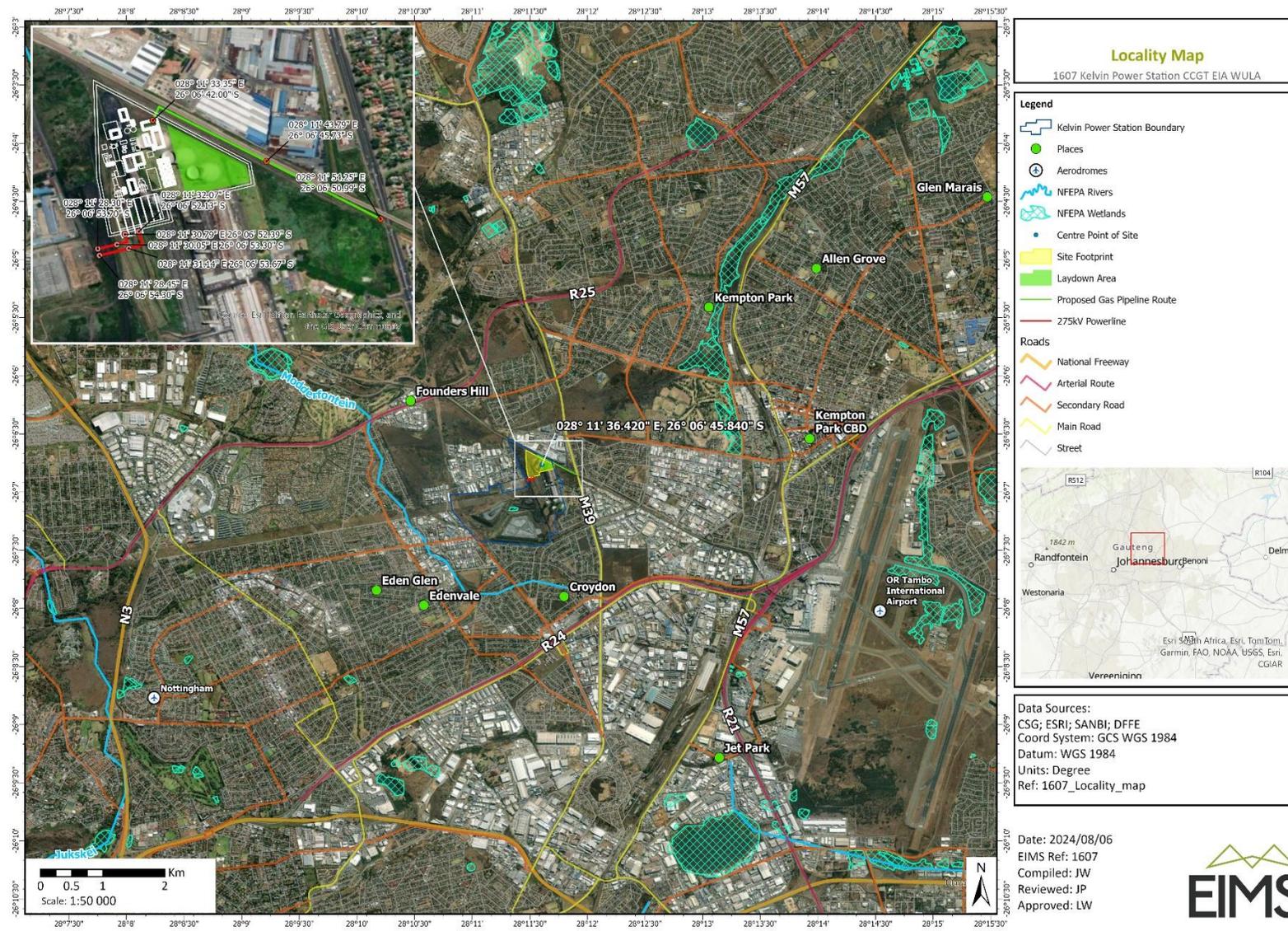


Figure 1: Locality Map

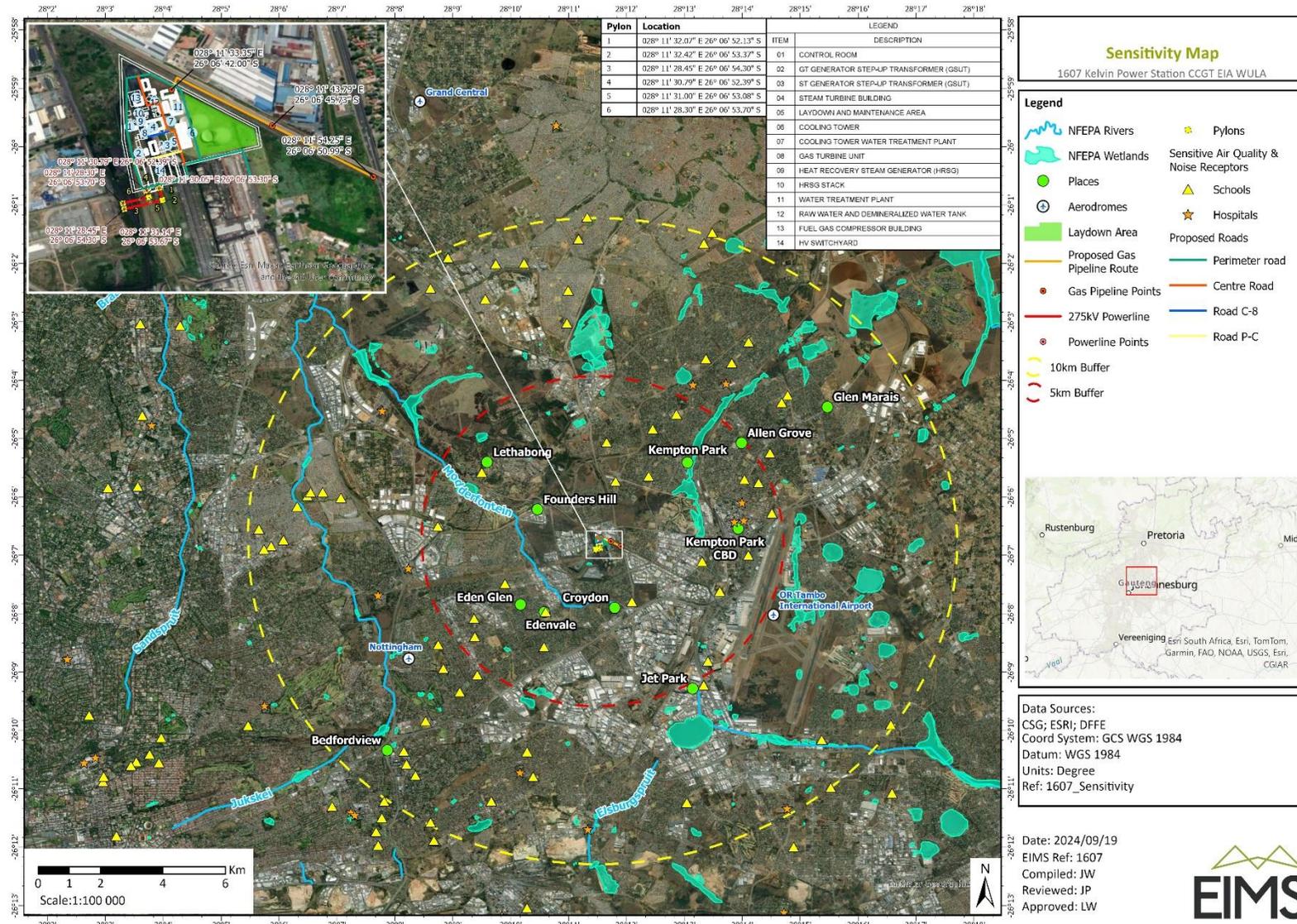


Figure 2: Sensitivity Map



## 1.5 DETAILS OF THE EAP

EIMS has been appointed by Kelvin as the Independent EAP and to assist in preparing and submitting the EA application, Scoping and EIA Reports, and undertaking a Public Participation Process (PPP) in support of the proposed project. The contact details of the EIMS consultant who compiled this EMPr are as follows:

- Name of the consultant: John von Mayer
- Tel No.: 011 789 7170
- Fax No.: 011 787 3059
- E-mail address: [john@eims.co.za](mailto:john@eims.co.za)
- Registered Professional Natural Scientist (SACNSP- #400336/11)
- EAPASA Registered Environmental Assessment Practitioner (2019/1247)

In terms of Regulation 13 of the EIA Regulations (GN R. 982) as amended, an independent EAP, must be appointed by the Holder to manage the application. EIMS has been appointed the EAP to assist with compiling the necessary reports and undertaking the statutory consultation processes, in support of the proposed Phase 3 Project. EIMS is compliant with the definition of an EAP as defined in Regulations 1 and 13 of the EIA Regulations, as well as Section 1 of the NEMA. This includes, *inter alia*, the requirement that EIMS is:

- Objective and independent;
- Has expertise in conducting EIA's;
- Comply with the NEMA, the environmental regulations and all other applicable legislation;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

### 1.5.1 SUMMARY OF EAP'S PAST EXPERIENCE

EIMS is a private and independent environmental management-consulting firm that was founded in 1993. EIMS has in excess of 30 years' experience in conducting EIA's, including many EIA's for power generation and related projects. Please refer to the EIMS website ([www.eims.co.za](http://www.eims.co.za)) for examples of EIA documentation currently available. John von Mayer is a senior consultant at EIMS and has been involved in numerous significant projects the past 15 years. He has experience in Project Management, small to large scale Environmental Impact Assessments, Environmental Auditing, Water Use Licensing, and Public Participation.



## 2 ENVIRONMENTAL MANAGEMENT SYSTEM

Management of operational risk is a key consideration for power stations operating within the social and economic context of South Africa. Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. Operational risks and impacts are usually managed through the implementation of the Environmental and Social Management System (ESMS) and Health and Safety (HS) system. A ESMS is an important requirement for establishing and maintaining effective environmental management and should be undertaken during the planning phase of the Project. As such the Holder of this EMPr shall be required to ensure all the aspects listed in this section are included as part of the ESMS existing at the power station. Adequate resources (people, financial and technical) need to be made available to ensure effective establishment, implementation, maintenance and continual improvements of the ESMS. The roles and responsibilities for these key environmental personnel should be clearly defined and communicated throughout the organisation. The ESMS should include the requirement to constantly monitor environmental performance and assess the adequacy of environmental resources provided. If required, Kelvin would need to procure further environmental resources to ensure the successful implementation of the ESMS and EMPr. The development and implementation of an ESMS will guide compliance with relevant regulatory and other requirements.

### 2.1 ESMS FRAMEWORK

Ultimately an effective ESMS should provide for effective management of social and environmental risks and impacts whilst maintaining legal compliance and meeting international standards of best practise where these are feasible and appropriate.

#### 2.1.1 STAKEHOLDER ENGAGEMENT

Social impacts already start in the planning phase of a project and as such it is imperative to start with stakeholder engagement as early in the process as possible. A stakeholder engagement plan will assist Kelvin to outline their approach towards communicating in the most efficient way possible with stakeholders throughout the life of the project. Such a plan cannot be considered a once off activity and should be updated on a yearly basis to ensure that it stays relevant and to capture new information. Stakeholders must provide input in the Stakeholder Engagement Plan.

The Kelvin Stakeholder Engagement Plan should have the following objectives:

- To identify and assess the processes and/or mechanisms that will improve the communication between local communities, the wider community and Kelvin.
- To improve relations between Kelvin staff and the people living in the local communities.
- To provide a guideline for the dissemination of information crucial to the local communities in a timely, respectful, and efficient manner.
- To provide a format for the timely recollection of information from the local communities in such a way that the communities are included in the decision-making process.

The Stakeholder Engagement Plan should be compiled in line with International Finance Corporation (IFC) Guidelines and should consist of the following components:

- Stakeholder Identification and Analysis – time should be invested in identifying and prioritising stakeholders and assessing their interests and concerns.
- Information Disclosure – information must be communicated to stakeholders early in the decision-making process in ways that are meaningful and accessible, and this communication should be continued throughout the life of the project.
- Stakeholder Consultation – each consultation process should be planned out, consultation should be inclusive, the process should be documented, and follow-up should be communicated.



- Negotiation and Partnerships – add value to mitigation or project benefits by forming strategic partnerships and for controversial and complex issues, enter into good faith negotiations that satisfy the interest of all parties.
- Grievance Management – accessible and responsive means for stakeholders to raise concerns and grievances about the project must be established throughout the life of the project.
- Stakeholder Involvement in Project Monitoring – directly affected stakeholders must be involved in monitoring project impacts, mitigation, and benefits. External monitors must be involved where they can enhance transparency and credibility.
- Reporting to Stakeholders – report back to stakeholders on environmental, social and economic performance, both those consulted and those with more general interests in the project and parent company.
- Management Functions – sufficient capacity within the company must be built and maintained to manage processes of stakeholder engagement, track commitments and report on progress.

It is of critical importance that stakeholder engagement takes place in each phase of the project cycle and it must be noted that the approach will differ according to each phase.

### **2.1.2 GRIEVANCE MECHANISM**

In accordance with international good practice Kelvin should establish a specific mechanism for dealing with grievances. A grievance is a complaint or concern raised by an individual or organisation that judges that they have been adversely affected by the project during any stage of its development. Grievances may take the form of specific complaints for actual damages or injury, general concerns about project activities, incidents and impacts, or perceived impacts. The IFC standards require Grievance Mechanisms to provide a structured way of receiving and resolving grievances. Complaints should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities and is at no cost and without retribution. The mechanism should be appropriate to the scale of impacts and risks presented by a project and beneficial for both the company and stakeholders. The mechanism must not impede access to other judicial or administrative remedies.

The grievance mechanism should be based on the following principles:

- Transparency and fairness;
- Accessibility and cultural appropriateness;
- Openness and communication regularity;
- Written records;
- Dialogue and site visits; and
- Timely resolution.

Based on the principles described above, the grievance mechanism process involves four stages:

- Receiving and recording the grievance;
- Acknowledgement and registration;
- Site inspection and investigation; and
- Response.

## **2.2 DOCUMENT CONTROL**

A document handling system must be established to ensure accurate updating of EMPr documents, and availability of all documents required for the effective functioning of the EMPr. The document handling system



must be devised by the project proponent and/or Contractors and agreed upon by all key parties. Responsibilities must be assigned to relevant personnel for ensuring that the EMPr documentation system is maintained and that document control is ensured through access by and distribution to identified personnel.

- Supplementary EMPr documentation could include:
- EMPr implementation activity specifications;
- Emergency preparedness and response procedures;
- Incident reports;
- Training records;
- Records of chemicals or hazardous substances kept on site;
- Records of alien invasive plant control activities;
- Site inspection reports;
- Monitoring reports;
- Auditing reports; and
- Complaints received.

The Environmental Control Officer (ECO) should be responsible for ensuring that the registration and updating of all relevant EMPr documentation is carried out. It is usually the responsibility of the Project Manager to ensure that all personnel are performing according to the requirements of this procedure and to initiate the revision of controlled documents, when required by changes in process. Clear procedures must be specified at the beginning of the project for making changes to EMPr documents, circulating updated documents, and destroying obsolete versions. Documents must be revised as required by changing circumstances. Distribution lists and document change control sheets must be kept for all documents.

## **2.3 RECORD KEEPING**

It is essential that an official procedure for control of records be developed to ensure records required to demonstrate conformity to environmental and social standards are maintained. Kelvin is therefore required to develop and maintain a procedure for the identification, storage, protection, retrieval, retention and disposal of records as part of the ESMS. Records must be legible, identifiable and traceable.

## **2.4 AUDITING AND REPORTING PROCEDURES**

Reporting procedures must be developed at the start of the project, for conveying information from the monitoring activities and to ensure that management is able to take rapid corrective action should certain thresholds be exceeded. Different reporting procedures to deal with may include:

- Inspections;
- Accidents and emergencies;
- Measuring performance indicators and interpreting and acting on the indicators;
- Records of monitoring activities to test the effectiveness of mitigation measures and impact controls, as well as for compliance auditing purposes; and
- Training programmes and evidence of appropriate levels/amount of skills/capacities created.

## **2.5 RESPONDING TO NON-COMPLIANCES**

If the mitigation measures stated in the EMPr are not adequately implemented, or do not achieve the desired result, the authorities may stop the project until corrective actions have been taken and the desired environmental objective or target has been met. A system for dealing with non-compliances (i.e. incentives or



disincentives for conformance and non-conformance with the EMPr requirements) must be employed to ensure that the EMPr is adequately implemented. The system to be used must be determined described in the EMPr before construction commences, included in the tender documents and contracts, and made clear to all project workers.

Non-compliance will be identified and managed through the following four key activities including;

- **Inspections** of the site and activities across the site;
- **Monitoring** of selected environmental quality variables;
- **Audits** of the site and relevant documentation as well as specific activities; and
- **Reporting** on a quarterly basis.

An environmental non-conformance and incident register must be prepared and maintained by the Environmental Officer/ECO throughout the lifespan of the project in order to monitor environmental concerns, incidents, and non-conformances. The register must include details of date, location, description of the NC or Incident, applicable environmental commitment/standard, corrective action taken, adequacy of corrective action, date rectified, etc.

Non-compliance with the EMPr or any other environmental legislation, specifications or standards shall be recorded by the EO/ECO in the non-conformance register. This register shall be maintained by the EO/ECO and will be sent to the Applicant /Environmental Manager on a regular basis (at least quarterly), and the Applicant /EM shall ensure that the responsible party takes the necessary corrective actions. Non-conformances may only be closed out in the register by the EO/ECO upon confirmation and record that adequate corrective action has been taken. The register should be utilised to measure overall environmental performance.

## 2.6 ENVIRONMENTAL INCIDENTS

For the purposes of this project, an environmental incident can be divided into three levels, i.e. major, medium and minor. All major and medium environmental incidents shall be recorded in the incident register. Minor incidents do not need to be reported but require immediate rectification on site. Definitions and examples of environmental incidents are provided in Table 3 below.

Table 3: Description of incidents and non-conformances for the purpose of the project

Non-Conformance	Any deviation from work standards, practices, procedures, regulations, management system performance etc. that could either directly or indirectly lead to injury or illness, property damage, damage to the workplace environment, or a combination of these.
Major Environmental Incident	<p>An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in widespread, long-term, irreversible significant negative impact on the environment and/or has a high risk of legal liability.</p> <p>A major environmental incident usually results in a significant pollution and may entail risk of public danger. Major environmental incidents usually remain an irreversible impact even with the involvement of long-term external intervention i.e. expertise, best available technology, remedial actions, excessive financial cost etc. Major environmental incidents may be required to be reported to the authorities. The ECO shall make the final decision as to whether a particular incident should be classified as a Major incident.</p> <p>An example of a Major environmental incident would be a significant spillage (e.g. 500 litres) of fuel into a watercourse.</p>



<p>Medium Environmental Incident</p>	<p>An incident or sequel of incidents, whether immediate or delayed, that results or has the potential to result in widespread or localised, short term, reversible significant negative impact on the environment and/or has a risk of legal liability.</p> <p>A medium environmental incident may be reported to the authorities, can result in significant pollution or may entail risk of public danger. The impact of medium environmental incidents should be reversible within a short to medium term with or without intervention. The ECO shall make the final decision as to whether a particular incident should be classified as a Medium incident.</p> <p>An example of a Medium environmental incident would be a large spill of fuel (e.g. 20 – 50 litres) onto land.</p>
<p>Minor Environmental Incident</p>	<p>An incident or sequel of incidents, whether immediate or delayed, where the environmental impact is negligible immediately after occurrence and/or once-off intervention on the day of occurrence.</p> <p>An incident where there is unnecessary wastage of a natural resource is also classified as a minor environmental incident. An example would be leaking water pipes that result in the wastage of water.</p> <p>A minor environmental incident is not reportable to authorities. An example of a minor incident is day to day spills of fuel or oil onto the ground where the spill is less than one or two litres.</p>

The following incident reporting procedures shall apply to this project:

- All environmental incidents shall be reported to the EO who shall ensure that the appropriate rectification is undertaken;
- The EO shall record all medium and major incidents in the incident register and advise on the appropriate measures and timeframes for corrective action;
- An incident report shall be completed by party responsible for the incident for all medium and major incidents and the report shall be submitted to the Power Station Manager and EO within 5 calendar days of the incident; and
- The EO shall investigate all medium and minor incidents and identify any required actions to prevent a recurrence of such incidents.

In the event of an emergency incident (unexpected sudden occurrence), including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed, the Applicant shall notify the relevant authorities in accordance with legal requirements (e.g. Section 30 of NEMA and Section 20 of the NWA). In the event of a dispute in terms of the classification of a such an incident, the Holder shall engage the ECO to advise on the potential reporting requirements in terms of the above.

## 2.7 ENVIRONMENTAL AWARENESS PLAN AND TRAINING

Training is essential for ensuring that the EMPr provisions are implemented efficiently and effectively. Training needs should be identified, based on the available and existing capacity of site and project personnel (including the project proponent, Contractors and Sub- contractors) to undertake the required EMPr management actions and monitoring activities. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard. In addition to these parties, general environmental awareness must be fostered among the general workforce to encourage the implementation of environmentally sound practices. This ensures that environmental accidents are minimized and environmental compliance maximized. Environmental



awareness could be fostered by induction course for all workers on site, before commencing work on site, as well as during regular “toolbox talks”. Workers should also be alerted to particular environmental concerns associated with their tasks for the area/habitat in which they are working. Courses must be given by suitably qualified personnel and in a language and medium understood by workers/employees.

### **2.7.1 MANNER IN WHICH EMPLOYEES WILL BE INFORMED OF ENVIRONMENTAL RISKS**

The Holder shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. All training must be formally recorded, and attendance registers retained. The environmental training should, as a minimum, include the following:

- General background and definition of the oceanic environment;
- The importance of compliance with all environmental policies;
- The environmental impacts, actual or potential, of their work activities;
- Compliance with mitigation measures proposed for sensitive marine fauna;
- Their roles and responsibilities in achieving compliance with the environmental policy and procedures and with the requirement of the holder’s environmental management systems, including emergency preparedness and response requirements;
- The potential consequences (legal and/or other) of departure from specified operating procedures including fines (where applicable);
- The mitigation measures required to be implemented when carrying out their work activities; and
- All operational risks must be identified, and processes established to mitigate such risk, proactively. Thus, the holder needs to inform the employees of any environmental risks that may result from their work, and how these risks must be dealt with in order to avoid pollution and/or degradation of the environment.

As part of the training process, teams / parties are encouraged to:

- Promote and encourage inspections/reporting on environmental impacting incidents;
- Support regional environmental management awareness campaigns/programmes and systems; and
- Be aware of your actions on the environment.
- Initial environmental induction and periodic toolbox talks should be made a requirement for all contractors.

### **2.7.2 MANNER IN WHICH ENVIRONMENTAL RISKS WILL BE DEALT WITH**

Environmental incident reporting is a vital part of communication for the Environmental Department at the power station. Employees are required to report any and all environmentally related problems, incidents and pollution, so that the appropriate remedial action can be implemented timeously. Communication is a management responsibility.

### **2.7.3 EMERGENCY RESPONSE PLAN**

The Holder must identify potential emergencies and develop procedures for preventing and responding to them. There are several options for dealing with high priority impacts and risks, as the paradigm has two components, probability and consequence. The design of control measures rests on understanding the cause and effect. Best practise is to intervene with the ultimate factors where feasible, rather than treat the outcomes. Emergency



response therefore has the option of reducing probability or reducing the consequence while reducing the probability is the preferred option. Below are some common emergency preparedness approaches:

- Threat consequence if a risk eventuates, when the risk becomes an issue;
- Combine reducing the probability and treating the consequence;
- Offset environmental losses by investing in other assets;
- Not manage some of the risks because there are too many; and
- Make provision to manage residual impacts or issues that arise because of shortcomings in risk identification and rating, avoidance and mitigation or because a rare event has occurred.

Residual impacts are those impacts that despite reducing the probability and consequence might still occur. In these cases, parties will have to be compensated, pollution cleaned up and damage to the environment remediated.

The Holder shall be required to develop and implement an Emergency Preparedness and Response Plan prior to commencing work. The Holder must ensure that the Emergency Preparedness and Response Plan makes provision for environmental emergencies, including, but not limited to:

- Fire and Explosion Prevention;
- Fire and Explosion Emergency Response;
- Gas leak detection;
- Spill prevention;
- Spill Response;
- Mechanical and electrical failures;
- Natural Disasters;
- Security or unrest threats;
- Accidents to employees; and
- Use of hazardous substances and materials, etc.

The Holder and Contractor must ensure that lists of all emergency telephone numbers/contact persons (including fire control) are kept up to date and that all numbers and names are posted at relevant locations throughout the project lifecycle.

### **2.7.3.1 FIRE**

Fires represent a significant risk and requires special attention in the Emergency Response Plan. Sparks generated during welding, spontaneous combustion, cutting of metal or gas cutting can result in fires. Every possible precaution shall therefore be taken when working with this equipment near potential sources of combustion. The Holder must take all reasonable measures to ensure that fires are not started as a result of activities on site. No smoking is allowed near containers with flammable contents or at areas that are highly flammable. Smoking is only permitted at areas designated for smoking. No open fires are permitted on site and no burning of waste is to be allowed on site. The Holder shall ensure that there is sufficient fire-fighting equipment available on site at all times. Such precautions include having an approved fire extinguisher immediately available at the site of any such activities. The Holder is to ensure that he/she has the contact details of the nearest fire station in case of an emergency. Appropriate and correctly serviced equipment must be available for all activities that are likely to generate fire.

If firebreaks are required around the site perimeter it is recommended that such fire prevention measures are implemented in consultation with adjacent landowners and where necessary that the Holder coordinate fire prevention efforts with local Fire Protection Agency (FPA).



### **2.7.3.2 HEALTH AND SAFETY**

The Holder shall make allowance for the supply, erection, maintenance and removal of the information boards. Information boards shall also provide the name of the process managers, relevant contact person and contact number. This will ensure that the public access to request information and/or to lodge any complaints. The boards will essentially be to advise the public of the construction activities to be undertaken or being undertaken and to advise of the prohibition of entering demarcated “no-go” areas.

The Holder must ensure that compliance with the Occupational Health and Safety Act (Act No. 85 of 1993) is strictly adhered to. All reasonable measures must be taken to ensure the safety of all site staff and the surrounding community is not compromised. No weapons may be brought onto the property by any person. Where fencing is temporarily affected, temporary security must be provided at all times until the fence is reinstated.

The Holder must ensure that all vehicles using public roads are in a roadworthy condition, that drivers adhere to the speed limits and that their loads are secured and that all local, provincial and national regulations are adhered to. The Holder shall make provision for flagmen to regulate traffic and construction vehicles when necessary.

The Holder must ensure that all accidents and incidents are recorded and reported to the EO/ECO. The Holder must have easy access to all relevant emergency numbers for example, spill response teams, fire authorities, fire protection associations, medical emergency, nearest emergency rooms (hospitals) to the site, of both private and public hospitals. The Holder must take all reasonable measures to ensure the health and safety of all employees, visitors and the public.

### **2.7.3.3 SPILL RESPONSE PROCEDURE**

The Contractor must ensure that all employees, staff and labourers are informed and instructed regarding implementation of spill prevention measures and spill response procedures. In the event of a spill, the following general requirements shall apply, and the detailed spill procedure must cater for these requirements:

- Immediately reporting of spills by all employees and/or visitors to the relevant supervisor and EO (this requirement must be including in induction training);
- Take immediate action to contain or stop the spill where it is safe to do so;
- Contain the spill and prevent its further spread;
- Dispose of any contaminated materials according to appropriate waste disposal procedure. Note: Waste from spills of hazardous materials shall be disposed of as hazardous waste at a suitably licensed onshore waste disposal facility;
- The Contractor’s onsite EO or Lead MMO / PAM shall record details of the spill in their respective incident registers;
- Photographic evidence shall be obtained of the spill clean-up.

In the case of large spills, the services of a specialist spill response agency shall be required, who shall advise on appropriate clean-up procedures and follow-up monitoring (if required). The Holder must also, (as per Section 30 of the NEMA) notify the Director-General (DWS, Competent Authority), South African Police Services, Provincial Environmental Authority, the Local Municipality, and any persons whose health may be affected of the nature of an incident including:

- Any risks posed to public health, safety and property;
- Toxicity of the substance or by products released by the incident; and
- Any step taken to avoid or minimise the effects of the incident on public health and the environment.



#### **2.7.3.4 MEASURES TO CONTROL OR REMEDY ANY CAUSES OF POLLUTION OR DEGRADATION**

The broad measures to control or remedy any causes of pollution or environmental degradation as a result of the proposed activities taking place are provided below:

- Ensure that the environmentally sensitive areas are adequately understood ;
- Contain potential pollutants and contaminants (where possible) at source;
- Handling of potential pollutants and contaminants (where possible) must be conducted in controlled areas;
- Ensure the timeous clean-up of any spills;
- Implement a waste management system for all waste streams present; and
- Investigate any third party claims of pollution or contamination as a result of the project activities.

It is of critical importance that the broad measures to control or remedy any causes of pollution or environmental degradation are applied during all phases of the proposed operation.



### 3 COMPLIANCE MONITORING

#### 3.1 RESPONSIBLE PERSONS

This section includes details as to the roles and responsibilities of responsible persons.

Different parties have different responsibilities and roles in the implementation of the EMPr. A summary is included in Figure 3.

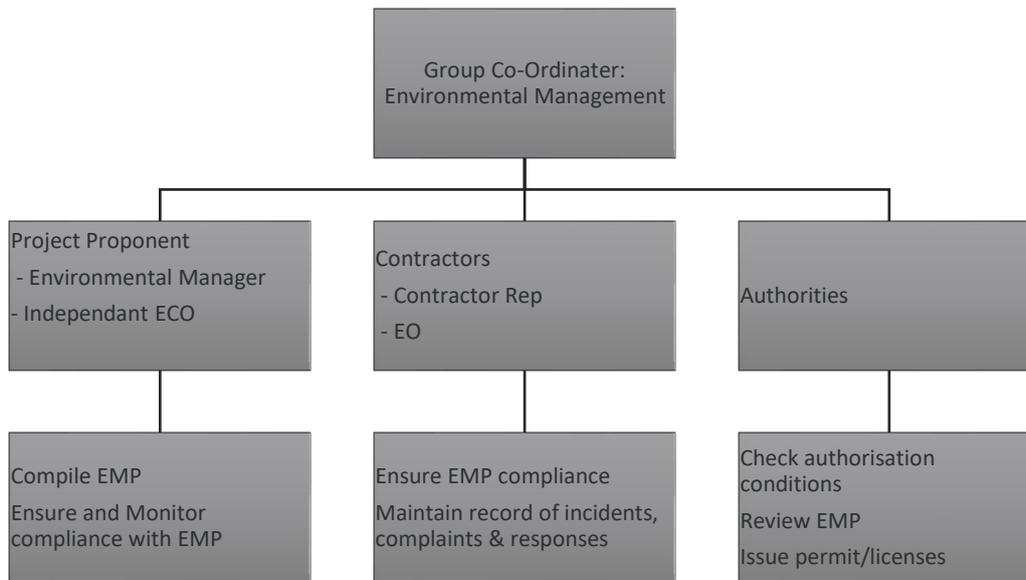


Figure 3: Responsibilities and Roles For Identified Actions

##### 3.1.1 PROJECT PROPONENT

The Project Proponent is responsible for the following tasks:

- Appoint an Environmental Control Officer (ECO);
- Appoint a suitably qualified Environmental Manager (EM);
- Notify DFFE of changes in the operation resulting in significant environmental impacts;
- Ensure compliance with the EMPr is incorporated into contractor responsibilities;
- Assess the Contractors environmental performance in consultation with the ECO; and
- Ensure compliance with regulations.

Therefore, ultimately, the Project Proponent is responsible for the development and implementation of the EMPr and, where relevant, ensuring that the conditions in the authorisation are satisfied. Where construction / operation activities are contracted out (e.g. to Contractors and Subcontractors), the liability associated with non-compliance still rests with the Project Proponent (unless otherwise agreed upon between the authorities, the Project Proponent and the contracting parties). The Project Proponent (and not the Contractor) is therefore responsible for liaising directly with the relevant authorities with respect to the preparation and implementation of the EMPr and meeting authorisation conditions.

##### 3.1.2 CONTRACTORS

Each Contractor affected by the EMPr should appoint a Contractor’s Representative (the title may vary), who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor’s



representative can be the site agent; site engineer; a dedicated environmental officer (EO); or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the ECO and the public. The Contractor's Representative ensures that all Sub contractors working under the Contractor abide by the requirements of the EMPr.

The Contractor is answerable to the Project Manager for all environmental issues associated with the project. Contractor performance will, amongst others, be assessed on health, safety and environmental management criteria. The Project Proponent must inform the Contractor of the EMPr obligations (which have ideally been integrated into the tender document), as well as environmental training to be undertaken by the Contractor in terms of these obligations. Contractors must communicate these obligations to their Sub-contractors and ensure that there is compliance.

The Contractor may appoint an Environmental Officer (EO), or officers, if more than one is required. Their primary role is to coordinate the environmental management activities of the Contractor on site. The EO may be required to perform the following roles:

- Support the ECO in monitoring by maintaining a permanent presence on site.
- Inspect the site as required to ensure adherence to the management actions of the EMPr.
- Complete Site Inspection Forms on a regular basis (weekly).
- Provide inputs to the regular (quarterly) environment report to be prepared by the ECO.
- Liaise with the construction team on issues related to implementation of, and compliance with the EMPr.
- Maintain a record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken, for submission to the Project Proponent.
- Maintain a public complaints register in which all complaints are recorded, as well as action taken, for submission to the Project Proponent.

### **3.1.3 ENVIRONMENTAL CONTROL OFFICER**

The ECO is appointed by the Holder and should be independent from the Holder and the Contractors. The ECO should have appropriate training and/or experience in the implementation of environmental management specifications. The ECO must preferably have a tertiary qualification in an Environmental Management or appropriate field. The ECO provides feedback to the Project Manager regarding all environmental matters. The ECO's key role is auditing the implementation of the EMPr. For the purposes of implementing the conditions contained herein, the Holder should appoint the ECO well before the start of survey activities. The ECO is responsible for the auditing function as well as the clarification of environmental conditions contained in this EMPr to anyone working on the site.

### **3.1.4 AUTHORITIES**

The authorities may be required to perform the following roles:

- Participate in a meeting(s) with the Project Proponent at the start of the EMPr process in order to reach agreement on the approach to the EMPr.
- Review Monitoring and Audit reports, if required.
- Review whether there is compliance by the Project Proponent and Contractor with the terms of the EMPr and permit/license conditions. Whenever necessary, the authorities should assist the Project Proponent in understanding and meeting the specified requirements.



The authorities may perform random controls to check compliance. In case of persistent non-compliance, the Project Proponent will be required to provide an action plan with corrective measures and have it approved by the authorities.

### **3.2 METHOD OF MONITORING IMPACT MANAGEMENT ACTIONS**

Kelvin is required to develop an auditing and reporting procedure. The purpose of the auditing and reporting procedure is to clearly define the requirements for compliance monitoring and audits and the reporting of the information gathered. This section provides a framework for the detailed procedure which will be developed by the Holder.

Different reporting mechanisms may include:

- Inspections;
- Reporting accidents and emergencies;
- Measuring performance indicators and interpreting and acting on the indicators;
- Records of monitoring activities to test the effectiveness of mitigation measures and impact controls, as well as for compliance auditing purposes; and
- Training programmes and evidence of appropriate levels/amount of skills/capacities created.

All monitoring and auditing must be accompanied by applicable records and evidence (e.g. delivery slips, photographic records, etc.). All reports must be retained and made available for inspection by the ECO, the Holder and /or the Relevant Competent Authorities. All reports shall be signed by the relevant parties to ensure accountability. Kelvin must use the audit report findings to continually ensure that environmental protection measures are working effectively on site through a system of self-checking. The framework for compliance monitoring and auditing is summarised in the sections below.



Table 4: Proposed framework for compliance monitoring and audits

Resource	Document	Implementation		Checking/Monitoring/Audit	
		Responsible Party	Frequency	Type	Reporting Frequency
<b>Environmental Manager</b>	ESMS Procedures	Kelvin	As Required	Report Review	As Required
	EMP/EMPr	Kelvin	As Required	Report Review	As Required
	IWULA	Kelvin	As Required	Report Review	As Required
	NEMA EA	Kelvin	As Required	Report Review	As Required
	Other Licences, Permits or Approvals	Kelvin	As Required	Report Review	As Required
<b>Environmental Officer</b>	ESMS Procedures	Contractor	Weekly	Site Inspection	Weekly
	EMP/EMPr	Contractor	Weekly	Site Inspection	Weekly
	IWULA and AEL	Contractor	Weekly	Site Inspection	Weekly
	NEMA EA	Contractor	Weekly	Site Inspection	Weekly
	Other Licences, Permits or Approvals	Contractor	Weekly	Site Inspection	Weekly
<b>Environmental Control Officer</b>	ESMS Procedures	External ECO	-	Sample Audit	Monthly during construction / annual during operation
	EMP/EMPr	External ECO	-	Sample Audit	Monthly during construction / annual during operation
	WULA	External ECO	-	Sample Audit	Monthly during construction / annual during operation



Resource	Document	Implementation		Checking/Monitoring/Audit	
		Responsible Party	Frequency	Type	Reporting Frequency
	NEMA EA	External ECO	-	Sample Audit	Monthly during construction / annual during operation
	Other Licences, Permits or Approvals	External ECO	-	Sample Audit	Monthly during construction / annual during operation



### 3.3 MONITORING AND REPORTING FREQUENCY

The following auditing and reporting shall be required during construction:

- Weekly Compliance Reports: These reports must be prepared by the designated EO or contractor EO and must aim to monitor and report on-site environmental performance during construction;
- Monthly Compliance Audits: These audits must be undertaken by the EO during construction and must aim to monitor and report on compliance with the requirements of the relevant authorisations, licences and permits, the approved EMPr; and
- Quarterly Audit Reports: The ECO must compile quarterly compliance reports (audits) during the construction phase which are to be submitted to the Holder for his review and correction of non-compliance issues. It is the responsibility of the ECO to report any non-compliance, which is not correctly rectified.

### 3.4 EMPR AUDITING

Audits are required to be undertaken in terms of Regulation 34 of the National Environmental Management Act, Act 107 of 1998 (NEMA) Environmental Impact Assessment (EIA) Regulations, 2014. An EMPr audit report shall be submitted to the DFFE on a monthly basis during construction and an annual basis during operation. The Holder must appoint an independent qualified person for the monitoring and to compile a report, but the responsibilities remain the Holder's. The performance assessment will include:

- The period when the performance assessment was conducted;
- The scope of the assessment;
- The procedures used for conducting the assessment;
- Interpreted information gained from monitoring the EMPr (e.g. ECO reports);
- Evaluation criteria used during the assessment; and
- Results of the assessment are to be discussed and mention must be made of any gaps in the EMPr and how it can be rectified.



### 3.5 MECHANISMS FOR MONITORING COMPLIANCE

Table 5 below provides a summary of the functional requirements for monitoring that needs to be implemented, identifies who is responsible for the monitoring and the frequency of monitoring and reporting.

Table 5: Mechanisms for monitoring compliance

Source Activity	Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities	Monitoring and Reporting Frequency and Time Periods for Implementation
<b>Planning and Design</b>	None	None		
<b>Construction</b>	All Impacts Identified during the EIA	Site Inspections and checklists	Environmental Officer	Daily inspections and checklists
		Report Review and Development of Action Plans for Corrective Action	Environmental Manager	As Required
		Site Inspections and Audits	Environmental Officer	Weekly inspections
				Monthly Reports
			Environmental Control Officer	Monthly Audit Reports
			Independent Environmental Auditor	Annual Performance Assessment
<b>Operation</b>	All Impacts Identified during the EIA	Site Inspections and checklists	Environmental Officer	Weekly inspections and checklists
		Report Review and Development of Action Plans for Corrective Action	Environmental Manager	As Required
			Environmental Control Officer	Bi-Annual Audit Reports



Source Activity	Impacts Monitoring Programmes	Requiring	Functional Requirements for Monitoring	Roles and Responsibilities	Monitoring and Reporting Frequency and Time Periods for Implementation	
				Independent Environmental Auditor	Annual Performance Assessment	
<b>Decommissioning Activities</b>	All Impacts Identified during the EIA		Site Inspections and checklists	Environmental Officer	Daily inspections and checklists	
				Report Review and Development of Action Plans for Corrective Action	Environmental Manager	As Required
				Site Inspections and Audits	Environmental Officer	Weekly inspections
						Monthly Reports
					Environmental Control Officer	Monthly Audit Reports
					Independent Environmental Auditor	Annual Performance Assessment
<b>Rehabilitation</b>	All Impacts Identified during the EIA		Report Review and Development of Action Plans for Corrective Action	Environmental Manager	As Required	
				Site Inspections and Audits	Environmental Officer	Weekly inspections
						Monthly Reports
					Environmental Control Officer	Bi-Annual Audit Reports
					Independent Environmental Auditor	Annual Performance Assessment



### **3.6 REVIEW AND REVISION OF THE EMPR**

It is important to note that this EMPr is made legally binding on the Holder at such time as the EMPr is approved by the decision-making authority. It is however also important to consider that the EMPr is a dynamic document which may require such alteration and /or amendment as the project evolves. Conditions under which the EMPr would require revision include:

- Changes in legislation;
- Occurrence of unanticipated impacts or impacts of greater intensity, extent and significance than predicted;
- Inadequate mitigation measures (i.e. where environmental performance does not meet the required level despite the implementation of the mitigation measure); and
- Secondary impacts occur as a result of the mitigation measures.

The Holder in consultation with the ECO should be responsible for ensuring that the registration and updating of all relevant EMPr documentation is carried out. It shall be the responsibility of the Holder to ensure that all personnel are performing according to the requirements of this procedure and to initiate the revision of controlled documents, when required by changes in process or operations and shall notify the ECO of such changes.

It is recommended that a risk assessment protocol must be developed and implemented by the ECO which shall be utilised to evaluate the environmental risk associated with the potential proposed alterations and/or amendments. The results of the risk assessment must then be included in the submission to the competent authority for the amendment process. It is important to note that if alterations and/or amendments are required, these may only be affected with written approval from the competent authority and in accordance with the then-in-effect relevant legal processes. ESMS procedures will be updated and improved over time. The references made to procedures contained in the ESMS are subject to change as the system evolves and improves and the EMPr in such instances will change to align with the company system over time.

## **4 IMPACT MANAGEMENT OUTCOMES**

This section of the EMPr provides the impact management outcomes identified for the Kelvin CCGT project. The impact management objectives, including the standard to be achieved, are summarised in Table 6 below.



Table 6: Impact Management Outcomes

Activity	Potential Impact	Aspects	Phase	Objective / Outcome	Standard to be Achieved
<b>Site establishment</b> <b>Construction</b> <b>Operation</b>	Erosion	Biodiversity Soils Air Quality	Construction Operation Decommissioning	Minimise potential for soil erosion. Avoid and control through preventative measures (storm water infrastructure, erosion control and monitoring) Awareness training for all personnel	CARA Stormwater management plan in place Grievance mechanism in place
<b>Site establishment</b> <b>Construction</b> <b>Operation</b>	Soil Pollution/Contamination	Biodiversity Soils	Construction Operation Decommissioning	Avoid pollution through preventative measures (e.g. bunding, spill kits) Remedy through clean-up and waste disposal	Hazardous Substances Act NWA NEMA Duty of Care NEMWA Incident reporting procedures DWS minimum standards for waste disposal Hazardous Substances Act SANS 10206
<b>Site establishment</b> <b>Construction</b> <b>Operations</b> <b>General decommissioning activities</b>	Damage/Disruption of Ecosystem Services	Land Use Biodiversity	Construction Operation Decommissioning	Prevent unnecessary disturbance Control through implementation of EMPr mitigation measures (e.g. limit area of disturbance, training,	NEMBA TOPS Alien invasive management plan in place



Activity	Potential Impact	Aspects	Phase	Objective / Outcome	Standard to be Achieved
				prevent damage caused by pipe leaks) Prevent proliferation of alien species.	Pest control plan in place
<b>Site establishment</b> <b>Construction</b> <b>Operation</b> <b>General decommissioning activities</b> <b>Water management</b>	Direct and indirect mortality of flora and fauna	Biodiversity of	Planning and Design Construction Operation Decommissioning Rehabilitation and Closure	Control through implementation of EMPr mitigation measures (e.g. limit area of disturbance, training, prevent damage caused by pipe leaks)	NEMBA TOPS
<b>General decommissioning activities</b>	General Environmental Pollution	Environmental Pollution	Decommissioning Rehabilitation and Closure	Avoid pollution caused by fuel spillages and improper storage of materials.  Avoid and control through implementation of EMPr mitigation measures (e.g. Spill prevention, Hydrocarbon Storage)	Hazardous Substances Act NWA MSDS OHSA NEMA Duty of Care NEMA Polluter Pays Principle NEMWA Incident reporting procedures DWS minimum standards for waste disposal



Activity	Potential Impact	Aspects	Phase	Objective / Outcome	Standard to be Achieved
<b>Site establishment</b> <b>Operations</b> <b>Post Closure Monitoring and Maintenance</b> <b>Water management</b>	Hydrocarbon spills/contamination	Environmental Pollution	Planning and Design Construction Operation Decommissioning	Avoid pollution caused by fuel spillages and improper storage of materials Avoid through preventative measures (e.g. bunding, spill kits) Remedy through cleanup and waste disposal	Hazardous Substances Act NWA MSDS OHSA NEMA Duty of Care NEMWA Incident reporting procedures DWS minimum standards for waste disposal
<b>Construction</b> <b>Operations</b> <b>General decommissioning activities</b>	Health and safety Impacts	Health and Safety	Construction Operation Decommissioning	Ensure safety of property, workers and people living in the vicinity Check through implementation of mitigation measures	OHSA Grievance Mechanism
<b>Construction</b> <b>Operations</b> <b>General decommissioning activities</b>	Emissions and air pollution	Air Quality	Planning and Design Construction Operation Decommissioning	Minimise and prevent dust and air pollution. Avoid through preventative measures (e.g. speed limit enforcement)	Road Traffic Act NEMAQA Dust regulations



Activity	Potential Impact	Aspects	Phase	Objective / Outcome	Standard to be Achieved
				Control through implementation of EMPr mitigation measures (e.g. dust suppression)	
				Air quality monitoring as per AEL requirements	
				Monitoring and control of fugitive emissions	
<b>Construction</b> <b>Operations</b> <b>General decommissioning activities</b>	Disturbing and/or nuisance noise	Noise	Planning and Design Construction Operation Decommissioning	Reduce the impact of noise on the surrounding area.  Avoid through preventative measures (e.g. communication with landowners, timing of activities)  Control through implementation of EMPr mitigation measures (e.g. Noise abatement measures)	Gauteng Noise Control Regulations SANS 10103  OHSA



## 5 IMPACT MANAGEMENT ACTIONS: MANAGEMENT PROGRAMME

Table 7 below provides measures for management of the environmental aspects that are impacted on during the different phases of the project.

Table 7: Description of the proposed impact management actions.

Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
<b>5.1 ENVIRONMENTAL MANAGEMENT SYSTEM</b>						
<b>General Management</b>	Planning and Design Construction Operation Decommissioning	No direct physical disturbance	<p>Kelvin shall develop an effective Environmental and Social Management System (ESMS) that is appropriate to the nature and scale of the project. The ESMS should include and provide for the following as a minimum:</p> <ul style="list-style-type: none"> <li>• Environmental Policy;</li> <li>• Ongoing Identification of risks and impacts;</li> <li>• Social and Environmental Management programs;</li> <li>• Organisational capacity and competency;</li> <li>• Emergency preparedness;</li> <li>• Stakeholder engagement; and</li> <li>• Monitoring and review.</li> </ul>	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project
<b>General Management</b>	Planning and Design Construction Operation Decommissioning	No direct physical disturbance	Kelvin shall ensure that Social and Environmental human resources have the knowledge, skills, and experience necessary to perform their work with competence and efficiency.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project
<b>General Management</b>	Planning and Design Construction	No direct physical disturbance	Kelvin shall appoint a suitably qualified and competent ECO who shall preferably be independent from the Holder. The ECO must preferably have a tertiary qualification in an Environmental Management or appropriate field. The ECO should have appropriate qualification and experience in the implementation	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Operation Decommissioning		of environmental management specifications. The ECO shall be tasked with auditing the environmental compliance on a regular basis (monthly). The Holder shall provide the ECO with the necessary support to ensure that the environmental aspects relating to the development is adhered to.			
<b>General Management</b>	Planning and Design Construction Operation Decommissioning	No direct physical disturbance	Kelvin must have a copy of this EMPr at the point of use and should be briefed by the EO or ECO with regards to the use and implementation of the EMPr.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project
<b>General Management</b>	Planning and Design	No direct physical disturbance	It is recommended that Kelvin verify the supply of gas prior to construction commencing to ensure that sufficient supply will be available for the CCGT project.	N/A		Supply to be verified prior to construction commencing
<b>General Management</b>	Planning and Design Construction Operation Decommissioning	No direct physical disturbance	The EMPr must be made binding on all sub-contractors (if utilised) operating on behalf of Kelvin.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project
<b>General Management</b>	Planning and Design Construction Operation	No direct physical disturbance	The Holder shall ensure that all sub-contractors (if utilised) abide by the requirements of the EMPr through the inclusion of the EMPr and applicable environmental requirements in contractual agreements for all sub-contractors.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
Decommissioning						
<b>5.2 EMERGENCY RESPONSE</b>						
<b>General Management</b>	Planning and Design Construction Operation Decommissioning	Emergencies have the potential for large scale and high significance impacts	The Holder shall develop and implement an Emergency Preparedness and Response Plan which shall include and provide for the following as a minimum: <ul style="list-style-type: none"> <li>• Risk assessment;</li> <li>• Response procedures;</li> <li>• Provision of equipment and resources;</li> <li>• Designation of responsibilities;</li> <li>• Communication and reporting (including that with potentially affected communities)</li> <li>• Periodic training to ensure effective response; and</li> <li>• Periodic review and revision, as necessary, to reflect changing conditions.</li> </ul>	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project
<b>General Management</b>	Planning and Design Construction Operation Decommissioning	No direct physical disturbance	The necessary provisions (financial, resources, materials) shall be made in order to ensure compliance with the Emergency Preparedness and Response Plan.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project
<b>5.3 HEALTH AND SAFETY</b>						
<b>General Management</b>	Construction Operation	Health and safety risks are classified as high significance due	The Holder shall ensure that reasonable measures are taken to ensure the safety of all site staff, including induction training for all employees and visitors.	OHS		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Decommissioning	to the value of human life				
<b>General Management</b>	Construction Operation Decommissioning	Health and safety risks are classified as high significance due to the value of human life	All staff and sub-contractors must be informed about any community concerns, especially during the construction phase. Toolbox talks can be used for this. Speed limits on the road to the site must be enforced. People that do not adhere to the speed limits shall receive the appropriate disciplinary action.	OHS		Throughout life of project
<b>General Management</b>	Construction Operation Decommissioning	Health and safety risks are classified as high significance due to the value of human life	The Holder shall provide appropriate Personal Protective Equipment (PPE) to employees wherever required and in accordance with the risks associated with their activities.	OHS		Throughout life of project
<b>General Management</b>	Construction Operation Decommissioning	Health and safety risks are classified as high significance due to the value of human life	The Holder shall undertake safety audits to ensure compliance with the Occupational Health and Safety Act (Act No. 85 of 1993) and associated regulations	OHS		Throughout life of project
<b>General Management</b>	Construction Operation Decommissioning	Health and safety risks are classified as high significance due to the value of human life	The Holder shall implement a safety reporting procedure to ensure that all accidents and incidents (safety and environmental) are recorded and reported to the power station manager and EO.	OHS SANS codes		Throughout life of project
<b>General Management</b>	Construction Operation	Health and safety risks are classified as high significance due	Any containers in which hazardous substances (e.g. fuel, paints, solvents) are stored shall be clearly marked as to the contents therein (in accordance with OHSA regulations).	OHS SANS codes		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Decommissioning	to the value of human life				
<b>General Management</b>	Construction Operation Decommissioning	Health and safety risks are classified as high significance due to the value of human life	The Holder must complete a detailed in the MHI study once the detailed design of the plant has been finalized. An MHI risk assessment that must be completed in accordance with the MHI regulations basing such a risk assessment on the final design and including engineering mitigation.	OHS SANS codes MHI Regulations		Prior to construction
<b>General Management</b>	Construction Operation Decommissioning	Health and safety risks are classified as high significance due to the value of human life	The Holder should prepare and issue of a safety document detailing safety and design features reducing the impacts from fires, explosions and flammable atmospheres to the MHI assessment body at the time of the MHI assessment	OHS SANS codes		Prior to construction
<b>General Management</b>	Construction Operation Decommissioning	Health and safety risks are classified as high significance due to the value of human life	Complete a recognised process hazard analysis (such as a HAZOP study, FMEA, etc.) on the proposed facility prior to construction to ensure design and operational hazards have been identified and adequate mitigation put in place.	OHS SANS codes		Prior to construction
<b>General Management</b>	Construction Operation Decommissioning	Health and safety risks are classified as high significance due to the value of human life	The Holder should ensure full compliance with IEC 61508 and IEC 61511 (Safety Instrument Systems) standards or equivalent to ensure that adequate protective instrumentation is included in the design and would remain valid for the full life cycle of the tank farm.	OHS SANS codes IEC standards		Prior to construction and throughout project operations
<b>5.4 ENVIRONMENTAL AWARENESS</b>						



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
<b>General Management</b>	Construction Operation Decommissioning	No direct physical disturbance	All employees and visitors to the site must undergo a visitors induction which shall include basic environmental awareness and site-specific environmental requirements (e.g. site sensitivities and relevant protocols/procedures). This induction should be presented or otherwise facilitated by the EO wherever possible.	NEMA		Throughout life of project
<b>5.5 CIVIL AVIATION</b>						
<b>General Management</b>	Planning	No direct physical disturbance	An obstacle evaluation application must be undertaken prior to construction with Air Traffic Navigation services	CAA		Prior to construction commencing
<b>5.6 SOCIAL AND SOCIO-ECONOMIC</b>						
<b>General Management</b>	Planning	No direct physical disturbance	The Holder must develop a stakeholder engagement strategy specific to the CCGT plant. From a social perspective it is important to continue to communicate the mitigation, monitoring and management measures to the affected parties.  Utilise existing community structures if available, to act as a communication link between the local community and the applicant for informing the local community of job opportunities and informing the Applicant of possible contractors in the local community.	Adherence to corporate policies and compliance with legislation including Labour Act and Employment Act		Prior to construction
<b>General Management</b>	Planning	No direct physical disturbance	The Holder should put measures in place to ensure the most effective local employment strategy. The strategy must include women and vulnerable people.	Adherence to corporate policies and compliance with legislation including Labour Act		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards with	Time Period for Implementation
				and Employment Act SLP Commitments	
<b>General Management</b>	Planning	No direct physical disturbance	The Holder should ensure a fair number of <b>secondary economic opportunities</b> are given to local contractors. A percentage of goods as determined by The Holder and the relevant stakeholders must also be <b>procured</b> locally. Services and goods must be procured locally as far as reasonably possible.	Adherence to corporate policies and compliance with legislation including Labour Act and Employment Act SLP Commitments	Throughout life of project
<b>General Management</b>	Planning Construction Operation Decommissioning	No direct physical disturbance	The Holder shall comply with all relevant legislation pertaining to labour recruitment and employment.	Compliance with legislation including Labour Act and Employment Act	Throughout life of project
<b>General Management</b>	Planning Construction Operation Decommissioning	No direct physical disturbance	No alcohol and drugs policy during working time or at times that will affect ability to work.  The Holder should Implement a random drug / alcohol testing policy at the worksite entrance at the start of the workday  Disciplinary measures for infringement of the Code and company rules. If workers are found to be in contravention of the Code of Conduct, which they signed at the commencement of their contract, they will face disciplinary procedures that could result in dismissal.	Compliance with legislation including Labour Act and Employment Act	Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards with	Time Period for Implementation
<b>General Management</b>	Planning Construction Operation Decommissioning	No direct physical disturbance	The Holder must continue to implement their grievance mechanism and ensure that it is community friendly. The Holder must continue to address and keep record of community grievances. The Holder must continue to keep a grievance register. It is important to have documented evidence of community/power station interactions. This will assist The Holder to track the issues, and the community to see what actions the power station has taken.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework	Developed as early as possible and implemented Throughout life of project
<b>General Management</b>	Planning Construction Operation Decommissioning	No direct physical disturbance	The Holder should compile and implement a traffic safety plan in accordance with recommendations from the traffic specialist. This plan should form part of the Health and Safety requirements for all contractors. Appropriate road signage must be used at the entry and exit points to the site. Although The Holder cannot take responsibility for all road users, they should include road safety toolbox talks.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework	Commence in the planning phase and continue throughout the life of the project
<b>General Management</b>	Planning Construction Operation Decommissioning	No direct physical disturbance	Develop a pamphlet that describes the new technology, any safety issues and risks and how the risks are managed. Distribute to surrounding communities through existing channels such as WhatsApp groups and Home Owners Associations.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework	Commence in the planning phase and continue through to the operation phase of the project
<b>General Management</b>	Planning Construction Operation Decommissioning	No direct physical disturbance	All contractors and employees need to wear photo identification cards. Vehicles should be marked as construction vehicles and should have logos clearly exhibited. Entry and exit points of the site should be controlled.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework	Commence in the planning phase and continue through to the operation phase of the project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
<b>General Management</b>	Construction	No direct physical disturbance	Develop and implement an HIV/AIDS policy awareness raising for all workers directly related to the Project.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Construction
<b>General Management</b>	Operation	No direct physical disturbance	To reduce the visual impact of the plant in the operational phase, plant buildings and structures should be painted with colours that are not visually intrusive.  Light fixtures must be installed that provide precisely directed illumination to reduce light “spillage” beyond the immediate surrounds of the power plant and avoid high pole top security lighting along the periphery of the site.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Construction
<b>5.7 SITE ESTABLISHMENT</b>						
<b>Construction camp sewage management</b>	Construction	Construction impacts are temporary in nature and have a limited extent but may include significant impacts	The physical footprint of any construction or site camp shall be minimised and vegetation clearance should be kept to the minimum required area.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout construction
<b>Dust suppression</b>				OHSA NEMA MPRDA		
<b>Earthworks</b>						
<b>Fencing</b>	Construction	Construction impacts are temporary in nature and have a limited extent but may	All construction and/or site camps shall be enclosed with a fence. The mesh size should be small enough for the fence to act as a catch net for blown debris and as a demarcation of the site. The fence shall be maintained as required to ensure access control remains effective. All temporary fences erected shall be	Shall adhere to the ESMS developed to ensure compliance		Throughout construction



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
<b>Hazardous substances management</b>		include significant impacts	removed and the site restored on completion of construction, unless otherwise agreed in writing with the Holder.	with the regulatory framework		
<b>Site security</b>				OHSA NEMA MPRDA		
<b>Truck and heavy machinery operation</b>	Construction	Construction impacts are temporary in nature and have a limited extent but may include significant impacts	Site and construction camps must be kept in a clean, neat and tidy condition at all times. The Holder shall maintain good housekeeping practices and shall comply with the relevant HSE regulations in terms of materials storage. Stockpiles of construction materials may only be placed within demarcated areas within the construction camp. Laydown areas must be kept neat and tidy and free of litter or waste.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout construction
<b>Utilization of portable toilets and generation of sewage</b>				OHSA NEMA NEMWA		
<b>Vegetation clearance</b>	Construction	Construction impacts are temporary in nature and have a limited extent but may include significant impacts	A waste storage area must be established within the site camp/construction camp that provides for appropriate and adequate waste storage and waste separation for recycling. All waste must be adequately contained to prevent ground and/or water pollution. The total volume of general waste stored shall not exceed 100m <sup>3</sup> . In the case that a storage capacity exceeding this amount is required or planned for, the necessary waste permits must be obtained in accordance with the NEMWA beforehand.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout construction
	Construction	Construction impacts are temporary in nature and have a limited	The site camp/construction camp shall have adequate provision for the storage of hazardous waste (e.g. old oil filters, soil from spills etc.) and the waste shall be contained within closed containers to prevent the possibility of spillages.	Shall adhere to the ESMS developed to ensure compliance		Throughout construction



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
		extent but may include significant impacts		with the regulatory framework OHSA NEMA MPRDA		
	Construction	Construction impacts are temporary in nature and have a limited extent but may include significant impacts	All fuel storage areas shall be bunded to contain at least 110 % of the volume stored and will comply with the relevant safety regulations. Fuel storage areas may not be located within 100m of the watercourse and the total volume of fuel stored on site may not exceed applicable thresholds in the listing notices without the necessary authorisation in terms of the NEMA. Fuel storage areas must be provided with an impervious surface with the provision to contain any potential fuel spillages during refuelling (e.g. a bunded, sealed concrete slab which drains to a sump/oil separator). No person smoke or take part in any activity that may results in sparks near fuels and other flammable substances to prevent ignition.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework OHSA NEMA		Throughout construction
	Construction	Construction impacts are temporary in nature and have a limited extent but may include significant impacts	All hazardous substances shall be stored within designated areas that comply with the relevant HSE standards (e.g. ventilation, access control, HSE signage, firefighting equipment etc.) and that provide for spill prevention and containment. It is recommended that a dedicated, bunded and fenced Hazardous Storage Area is provided within the construction camp for this purpose.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework OHSA NEMA NWA		Throughout construction



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Construction	Construction impacts are temporary in nature and have a limited extent but may include significant impacts	Any site camps/construction camps shall be provided with portable fire extinguishing equipment, in accordance with all relevant legislation and this equipment must be readily accessible.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework OHSA NEMA		Throughout construction
	Construction	Construction impacts are temporary in nature and have a limited extent but may include significant impacts	No open fires shall be permitted within the site camp/construction camp, except where approved by the responsible safety officer and EO/ECO and within a designated structure designed for that purpose. In such cases firefighting equipment must be readily available near the fire place and an appropriate safety representative should be present at all times during burning of the fire. All fires shall be fully extinguished after use.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework OHSA NEMA		Throughout construction
<b>5.8 TERRESTRIAL AND AQUATICS BIODIVERSITY</b>						
<b>Site establishment</b>	Planning and Design	Impacts on flora may occur over a large area and has the potential to be of moderate significance	An Alien Invasive Plant Management Plan must be compiled and implemented. This should regularly be updated to reflect the annual changed in AIP composition.	NEMA		Development of plan as soon as possible and implementation Throughout life of project
	Construction			NEMBA		
	Operation			CARA		
<b>Construction</b>	Decommissioning					



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
<b>Maintenance and operation of site infrastructure and facilities</b>	Planning and Design	Impacts on flora may occur over a large area and has the potential to be of moderate significance	Schedule activities and operations during least sensitive periods, to avoid migration, nesting, and breeding seasons. In this case, activities should take place during the day.	NEMBA	Threatened or Protected Species (TOPS) regulations	Prior to commencement of activities or disturbance
	Construction					
<b>Storm water management</b>	Planning and Design	Impacts on flora may occur over a small area and has the potential to be of moderate significance	Outside lighting should be designed and limited to minimise impacts on fauna. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (green/red) lights should be used wherever possible.	NEMBA		Prior to commencement of activities or disturbance
<b>Water management</b>	Construction					
	Construction	Impacts on air quality have a moderate significance and may occur over a large area	Dust-reducing mitigation measures must be put in place and must be strictly adhered to. This includes the wetting of exposed soft soil surfaces. No non-environmentally friendly suppressants may be used as this could result in the pollution of water sources.	NEMA		Throughout life of project
	Operation Decommissioning					
	Construction	Impacts on fauna and flora may occur over a small area and has the potential to be of moderate significance	The footprint area of the construction should be kept to a minimum. The footprint area must be clearly demarcated to avoid unnecessary disturbances to adjacent areas. Footprints of the roads must be kept to prescribed widths.  Laydown and construction preparation activities (such as cement mixing, temporary toilets, etc.) must be limited to already modified areas as far as possible and should take up the smallest footprint possible.	NEMA		Throughout construction



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Construction Operation	Impacts on fauna and flora may occur over a large area and has the potential to be of moderate significance	A fire management plan needs to be compiled and implemented to restrict the impact fire would have on the surrounding areas.	NEMA NEMBA CARA		Throughout life of project
	Construction Operation Decommissioning	Impacts on fauna and flora may occur over a large area and has the potential to be of moderate significance	Any materials may not be stored for extended periods of time and must be removed from the Project Area once the construction phase has been concluded. No permanent construction phase structures should be permitted. Construction buildings should preferably be prefabricated or constructed of re-usable/recyclable materials. No storage of vehicles or equipment will be allowed outside of the designated laydown areas.	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project
	Construction Operation Decommissioning	Impacts on flora may occur over a large area and has the potential to be a moderate significance	The clearing of vegetation must be minimised where possible. All activities must be restricted to within the authorised areas. Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should not be fragmented or disturbed further. All vehicles and personnel must make use of existing roads and walking paths as far as possible, especially construction/operational vehicles.	NEMA NEMBA CARA		Throughout construction



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Planning and Design	Impacts on fauna has the potential to be a relatively moderate significance especially where threatened or protected species are impacted upon	A final site walkthrough must be conducted prior to the construction phase. The site walkthrough must be conducted during the summer season between October and March. Priority must be the identification of any listed flora species. Although not noted during the site visit conducted for the EIA, any observed TOPS (Threatened or Protected Species) of plants must be clearly demarcated prior to the commencement of site clearing. If construction activities are likely to affect any SCC or protected plants these individuals must be relocated as part of a plant rescue and protection plan, and a permit must be obtained before doing so.	NEMA	to	Prior to construction commencing
	Construction			NEMBA		
	Operation			CARA		
	Decommissioning			Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		
	Planning and Design	Impacts on fauna has the potential to be a relatively moderate significance especially where threatened or protected species are impacted upon	The duration of the construction activities should be minimised to as short a term as possible, to reduce the period of disturbance on fauna. Noise must be kept to an absolute minimum during the evenings and at night to minimise all possible disturbances to reptile species and nocturnal mammals.	NEMBA		Throughout construction
	Construction			TOPS		
	Operation			Shall adhere to the ESMS developed to ensure compliance with the regulatory framework within the fra		
	Decommissioning					
	Construction	Small and localized	All construction waste must be removed from site at the closure of the construction phase.	NEMA,1998		Throughout construction
				Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		
	Planning	Impacts on fauna have the potential to be a relatively	A qualified environmental control officer must be on site when activities begin. A site walk through is recommended by a suitably qualified ecologist prior to any activities taking place	NEMA		Pre-construction
	Construction			NEMBA		



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
		moderate significance especially where threatened or protected species are impacted upon	and any SSC or protected species should be noted. In situations where these species are observed and must be removed, the proponent may only do so after the required permission/permits have been obtained in accordance with national and provincial legislation. In the abovementioned situation the development and implementation of a search, rescue and recovery program is suggested for the protection of these species. Should animals not move out of the area on their own, relevant specialists must be contacted to advise on how the species can be relocated.			
	Planning and Design Construction	Small and localized	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat. This will also reduce the likelihood of encroachment by alien invasive plant species. All grazing mammals must be kept out of the areas that have recently been re-planted, however these animals are highly unlikely to occur within this PAOI.	NEMA Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project
	Planning and Design Construction Operation Decommissioning	Pollution has the potential to pollute the environment and can vary from localized to large scale impacts	<p>A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site.</p> <ul style="list-style-type: none"> <li>• Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.</li> <li>• Handle hydrocarbons carefully to limit spillage.</li> <li>• Ensure vehicles are regularly serviced so that hydrocarbon leaks are limited.</li> </ul>	NEMA NEMBA CARA Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
			<ul style="list-style-type: none"> <li>No servicing of equipment on site unless necessary.</li> <li>All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers.</li> <li>Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.</li> <li>Construction activities and vehicles could cause spillages of lubricants, fuels and waste material negatively affecting the functioning of the ecosystem.</li> <li>All vehicles and equipment must be maintained, and all re-fuelling and servicing of equipment is to take place in demarcated areas outside of the Project Area.</li> </ul>			
	Construction Operation Decommissioning	Impacts on fauna has the potential to be a relatively moderate significance especially where threatened or protected species are impacted upon	It must be made an offence for any staff member to take any indigenous plant species out of any portion of the Project Area, or to bring any alien plant species into any portion of the Project Area. This is to prevent the spread of exotic or invasive species or the illegal collection of plants.	NEMA NEMBA CARA		Throughout life of project
	Planning and Design Construction Operation	Impacts on fauna has the potential to be a relatively moderate significance	A pest control plan must be put in place and implemented; it is imperative that poisons not be used to control pests.	NEMA NEMBA CARA		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Decommissioning	especially where threatened or protected species are impacted upon		Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		
	Construction Operation Decommissioning	Impacts on fauna has the potential to be a relatively moderate significance especially where threatened or protected species are impacted upon	Use environmentally friendly cleaning and dust suppressant products.	NEMA NEMBA CARA		Throughout life of project
	Construction	Impacts on fauna has the potential to be a relatively moderate significance especially where threatened or protected species are impacted upon	Any holes/deep excavations must be dug in a progressive manner and shouldn't be left open overnight. Should any holes remain open overnight they must be properly covered temporarily to ensure that no small fauna species fall in. Holes must be subsequently inspected for fauna prior to backfilling.	NEMA NEMBA CARA		Throughout construction
	Construction Operation Decommissioning	Impacts on fauna has the potential to be a relatively moderate significance especially where	All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited Measures (for example; speed	NEMA NEMBA CARA		Throughout construction and operation



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
		threatened or protected species are impacted upon	bumps and signs) must should be erected to enforce slow speeds. Only existing access routes and walking paths may be made use of.			Internal speed limits for haul roads and declared legal speed limits for public roads.
	Planning and Design Construction Operation Decommissioning	Impacts on fauna has the potential to be a relatively moderate significance especially where threatened or protected species are impacted upon	If fencing is required: wildlife-permeable fencing with holes large enough for mongoose and other smaller mammals should be installed, the holes must not be placed in the fence where it is next to a major road as this will increase road killings in the area.	NEMA NEMBA CARA		Throughout construction
	Construction Operation Decommissioning	Impacts on fauna has the potential to be a relatively moderate significance especially where threatened or protected species are impacted upon	All personnel and contractors are to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof.  Discussions are required on sensitive environmental receptors within the Project Area to inform contractors and site staff of the presence of protected species, their identification, conservation status and importance, biology, habitat requirements and management requirements in line with the Environmental Authorisation and within the EMPr.	Induction training shall comply with ESMS Framework		Throughout construction and operations
	Construction Operation Decommissioning	Impacts on flora and fauna may occur over a large area and has the potential to be of moderate significance	A stormwater management plan must be compiled and implemented.	NEMA NEMBA CARA		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Construction Operation Decommissioning	Impacts on fauna has the potential to be a relatively high significance especially where threatened or protected species are impacted upon	No trapping, killing, or poisoning of any wildlife is to be allowed and signs must be put up to enforce this. Monitoring must take place in this regard.	NEMA NEMBA CARA		Throughout life of project
	Operation	Impacts on water sources have the potential to be of moderate significance	The CCGT plant water uses for the discharge must be authorised, and the following applies:  Qualities must be in line with general wastewater limits set out in the General Authorization regulations; and  Quantities must be in consideration of the ecological reserve and hydrological regimes.	NEMA NWA		Throughout operation ( WUL in place before construction commences)
<b>5.9 SOILS</b>						
<b>Site establishment</b>	Construction	Small scale and localised	Vegetation clearance must be restricted to areas authorised for development. Land clearing and preparation may only be undertaken immediately prior to construction activities and within authorised areas.	CARA NEMA		Throughout Construction and operations
<b>Construction</b>				In accordance with Rehabilitation and closure plan		
<b>Operations</b>						
<b>Decommissioning</b>	Construction Operation Decommissioning	Pollution has the potential to pollute the environment and can vary from	All contractors must have spill kits available and be trained in the correct use thereof. All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects	CARA NEMA		Throughout Construction and operations



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
		localized to large scale impacts	such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good "housekeeping".	In accordance with Rehabilitation and closure plan	with	
	Construction Operation Decommissioning	Pollution has the potential to pollute the environment and can vary from localized to large scale impacts	Have action plans on site, and training for contactors and employees in the event of spills, leaks and other impacts to the aquatic systems. The contractors used for the project should have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly.	CARA NEMA In accordance with Rehabilitation and closure plan		Throughout Construction and operations
	Construction Operation	Small scale and localised	If soil erosion is detected, the area must be stabilised using geotextiles and facilitated re-vegetation	CARA NEMA In accordance with Rehabilitation and closure plan		Throughout Construction and operations
	Construction Operation Decommissioning	Pollution has the potential to pollute the environment and can vary from localized to large scale impacts	Storage of potential contaminants should be undertaken in banded areas.	CARA NEMA In accordance with Rehabilitation and closure plan		Throughout Construction and operations
<b>5.10 POLLUTION PREVENTION</b>						
<b>Site establishment</b>	Construction Operation	Pollution has the potential to pollute the environment	Any equipment that may leak, and does not have to be transported regularly, shall be placed on watertight drips trays to catch any potential spillages of pollutants. The drip trays shall	NEMA Polluter Pays Principle		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
<b>Water management Infrastructure construction</b>	Decommissioning	and can vary from localized to large scale impacts	be of a size that the equipment can be placed inside it. Daily inspections shall be carried out to ensure such spill prevention measures are in place and remain effective. Drip trays shall be cleaned regularly and shall not be allowed to overflow. All spilled hazardous substances must be collected and adequately disposed of at a suitably licensed facility.	NEMA Duty of Care NWA OHSA		Throughout life of project
	<b>General Construction</b>			Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		
<b>Operations</b>	Construction	Pollution has the potential to pollute the environment and can vary from localized to large scale impacts	Appropriate measures must be implemented to ensure that rainwater does not run into areas containing cement, oil, diesel etc. as this could result in a pollution threat. Storage areas for these substances should be placed on high-lying ground.	NEMA Polluter Pays Principle		Throughout life of project
<b>Maintenance and operation of site infrastructure and facilities</b>	Operation			NEMA Duty of Care		
	Decommissioning			NWA OHSA	Shall adhere to the ESMS developed to ensure compliance with the regulatory framework	
<b>General decommissioning activities</b>	Construction	Pollution has the potential to pollute the environment and can vary from localized to large scale impacts	Servicing and maintenance of vehicles may only take place in a workshop area (subject to suitable spill prevention and containment measures). The workshop area should be lined with concrete or alternatively plastic under gravel. If emergency repairs are required elsewhere on site, this shall be undertaken with the necessary spill prevention measures in place.	NEMA Polluter Pays Principle		Throughout life of project
	Operation			NEMA Duty of Care		
	Decommissioning			NWA OHSA	Shall adhere to the ESMS developed to	



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
				ensure compliance with the regulatory framework		
	Construction Operation Decommissioning	Pollution has the potential to pollute the environment and can vary from localized to large scale impacts	<p>Cement and liquid concrete are hazardous to the natural environment on account of the very high pH of the material, and the chemicals contained therein. As a result, the Holder shall ensure that:</p> <ul style="list-style-type: none"> <li>• Concrete shall only be mixed on mortar boards or suitably lined areas, and not directly on the ground;</li> <li>• The visible remains of concrete, either solid, or from washings, shall be physically removed immediately and disposed of as waste (washing of visible signs into the ground is not acceptable); and</li> <li>• All excess aggregate shall also be removed.</li> </ul>	<p>NEMA Polluter Pays Principle</p> <p>NEMA Duty of Care</p> <p>NWA</p> <p>OHSA</p> <p>Shall adhere to the ESMS developed to ensure compliance with the regulatory framework</p>		Throughout life of project
	Construction Operation Decommissioning	Pollution has the potential to pollute the environment and can vary from localized to large scale impacts	All hazardous substances (e.g. fuel, grease, oil, brake fluid, hydraulic fluid) must be handled, stored and disposed of in a safe and responsible manner so as to prevent pollution of the environment or harm to people or animals. Appropriate measures must be implemented to prevent spillage and appropriate steps must be taken to prevent pollution in the event of a spill.	<p>NEMA Polluter Pays Principle</p> <p>NEMA Duty of Care</p> <p>NWA</p> <p>OHSA</p> <p>Shall adhere to the ESMS developed to ensure compliance with the regulatory framework</p>		Throughout life of project
	Construction Operation	Moderate significance and potentially a	Hazardous substances shall be confined to specific and secured areas, and in such a way that does not pose any danger of pollution even during times of high rainfall. Hazardous storage	NEMA Polluter Pays Principle		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation	
	Decommissioning	moderate disturbance	scale	areas shall be bunded (impermeable) with adequate containment (at least 110% the total volume stored) for potential spills or leaks. Bunded storage areas shall be either provided with an oil separator or sump. Waste from spillages will then be removed and recycled or disposed of responsibly.	NEMA Duty of Care NWA OHSA		
	Construction Operation Decommissioning	Moderate significance potentially moderate disturbance	and a scale	All fuel storage areas shall be bunded to contain at least 110 % of the volume stored and will comply with the relevant environmental and safety regulations. Fuel storage areas must be provided with an impervious surface with the provision to contain any potential fuel spillages during refuelling (e.g. a sealed concrete slab which drains to a sump/oil separator). The Holder must ensure that employees and labourers do not smoke or take part in any activity that may results in sparks in the vicinity of fuels and other flammable substances to prevent ignition.	NEMA Polluter Pays Principle NEMA Duty of Care NWA OHSA		Throughout life of project
	Construction Operation Decommissioning	Moderate significance potentially moderate disturbance	and a scale	Refuelling may only take place within a dedicated area inside the power station that is subject to appropriate spill prevention and containment measures Refuelling and transfer of hazardous chemicals and other potentially hazardous substances must be carried out so as to minimise the potential for leakage and to prevent spillage onto the soil. Drip trays should be utilised in relevant locations (inlets, outlets, points of leakage, etc.) during transfer to prevent such spillage or leakage. Any accidental spillages shall be contained and cleaned up promptly.	NEMA Polluter Pays Principle NEMA Duty of Care NWA OHSA		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
				ESMS developed to ensure compliance with the regulatory framework		
	Construction Operation Decommissioning	Moderate significance and potentially moderate disturbance	Any excess or waste material or chemicals should be removed from the site and should preferably be recycled (e.g. oil and other hydrocarbon waste products). Any waste materials or chemicals that cannot be recycled shall be disposed of at a suitably licensed waste facility.	NEMWA DWS minimum requirement for waste disposal		Throughout life of project
	Construction Operation Decommissioning	Moderate significance and potentially moderate disturbance	Hazardous waste may only be disposed of at a licensed hazardous waste disposal facility. A specialist waste contractor shall dispose of such waste and shall be required to provide waste manifests and safe disposal certificates. The 'cradle-to-grave' principle must be complied with.	NEMA Polluter Pays Principle NEMA Duty of Care NEMWA DWS minimum requirement for waste disposal		Throughout life of project
	Construction Operation Decommissioning	Potential health risks are considered high significance	All relevant personnel on site must be properly trained concerning the proper use, handling and disposal of hazardous substances applicable to their line of work. If required, advice shall be obtained from the manufacturer with regard to the safe handling and storage of hazardous materials.	MSDS specifications OHSA		Throughout life of project
	Construction Operation Decommissioning	No direct physical disturbance	The EO shall maintain a list of all hazardous materials that would be present on site. The EO shall develop and maintain a hazardous substance register for all hazardous materials that shall be kept on site during all phases of the project. The register shall be provided to the ECO upon request. Material Safety Data	OHSA		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
			Sheets (MSDS) must be available on site at the point of use and readily accessible for all hazardous substances stored.			
<b>5.11 WASTE MANAGEMENT</b>						
<b>Maintenance and operation of site infrastructure and facilities</b>	Construction	Waste has the potential to pollute the environment and can vary from localized to large scale impacts.	The Holder shall develop and implement a waste management plan which complies with the principles of the NEMWA and provides a mechanism for the effective management of waste throughout the project lifespan. This plan shall ensure the appropriate management of all solid waste, including construction debris (cement bags, wrapping material, timber, cans, wire, nails, etc.), waste and surplus food, food packaging, organic waste etc.	NEMWA	to	Throughout life of project
	Operation			NEMA cradle to grave		
	Decommissioning			DWS minimum requirement for waste disposal		
<b>Site establishment</b>				Shall adhere to the ESMS developed to ensure compliance with the regulatory framework		
<b>Construction</b>						
<b>Operations</b>	Construction	Waste has the potential to pollute the environment and can vary from localized to large scale impacts.	The waste management system shall provide for adequate waste storage (in the form of waste skips and bins with lids), waste separation for recycling, and frequent removal of non-recyclable waste for permanent disposal at an appropriately licensed waste disposal facility. No waste material is to be disposed of on site.	NEMWA	to	Throughout life of project
	Operation			NEMA cradle to grave		
	Decommissioning			DWS minimum requirement for waste disposal		
<b>Maintenance and operation of site infrastructure and facilities</b>						
<b>General decommissioning activities</b>	Construction	Waste has the potential to pollute the environment and can vary from	Waste generated on site should be recycled as far as possible and sold/given to interested contractors. Recyclable waste should not be stored on site for excessive periods to reduce risk of environmental contamination Refuse bins will be responsibly	NEMWA	to	Throughout life of project
	Operation			NEMA cradle to grave		
	Decommissioning					



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
		localized to large scale impacts.	emptied and secured. Temporary storage of domestic waste shall be in appropriate receptacles.	DWS	minimum requirement for waste disposal	
	Construction Operation Decommissioning	Waste has the potential to pollute the environment and can vary from localized to large scale impacts.	Waste management must be a priority and all waste must be collected and stored effectively and responsibly according to a site-specific waste management plan. Dangerous waste such as metal wires and glass must only be stored in fully sealed and secure containers, before being moved off site as soon as possible.	NEMWA NEMA grave	cradle to	Throughout life of project
	Construction Operation Decommissioning	Waste has the potential to pollute the environment and can vary from localized to large scale impacts.	Litter, spills, fuels, chemical and human waste in and around the project area must be minimised and controlled according to the waste management plan.	NEMWA NEMA grave	cradle to	Throughout life of project
	Construction Operation Decommissioning	No direct physical disturbance .	The Holder shall maintain a waste register which shall be used to track all waste removed from site. Proof of appropriate waste disposal shall be kept on file at the site for auditing purposes.	NEMA grave	cradle to	Throughout life of project
	Construction Operation Decommissioning	Waste has the potential to pollute the environment and can vary from localized to large scale impacts.	The Contractor should supply sealable and properly marked domestic waste collection bins and all solid waste collected shall be disposed of at a licensed disposal facility within every 10 days at least.  Where a registered disposal facility is not available close to the site, the Contractor shall provide a method statement with	NEMA grave	cradle to	Construction



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
			<p>regards to waste management. Under no circumstances may domestic waste be burned on site or buried on open pits.</p> <p>Refuse bins will be responsibly emptied and secured. Temporary storage of domestic waste shall be in covered and secured waste skips. Maximum domestic waste storage period will be 10 days.</p>			
<b>5.12 SEWAGE AND SANITATION</b>						
<b>Site establishment</b>	Construction	Sewage has the potential to result in localized impacts of low to medium significance	There must be adequate provision for safe and effective sanitation (i.e. ablution facilities) and work sites and these shall conform to all relevant health and safety standards and codes. A minimum of one toilet must be provided per 10 persons. Toilets at the recommended Health and Safety standards must be provided. These should be emptied regularly and once no longer required, they must be pumped dry to prevent leakage into the surrounding environment and removed from site.	NEMWA	cradle to	Throughout construction
	Operation			NWA		
<b>General Construction</b>	Decommissioning			NEMA		
<b>General Management</b>	Construction	Sewage has the potential to result in localized impacts of low to medium significance	Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel within the project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation). Portable toilets will be managed by reputable contractors and inspected daily for any potential leaks. The Contractor (or reputable toilet-servicing company) shall be responsible for the cleaning, maintenance and servicing of the toilets. Chemical toilets shall be emptied/serviced frequently to avoid offensive odours (at least weekly). Toilets must be kept in a clean, neat and hygienic condition.	NEMWA	cradle to	Throughout construction
	Operation			NWA		
<b>Operations</b>	Decommissioning			NEMA		
<b>Maintenance and operation of site infrastructure and facilities</b>	Construction	Sewage has the potential to result in localized impacts of	Toilets must be easily accessible. Toilets shall be placed outside areas susceptible to potential flooding and shall not be placed within 50m of any wetland or watercourse. Ablution facilities	NEMWA		Throughout construction
	Operation			NWA		



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation	
<b>General decommissioning activities</b>	Decommissioning	low to medium significance	shall be located a sufficient distance from any offices or eating areas to prevent nuisance from offensive odours. Sanitary arrangements shall also be to the satisfaction of the ECO.	NEMA grave	cradle to		
	Construction	Sewage has the potential to result in localized impacts of low to medium significance	Disposal of sewage from chemical toilets shall be in a safe and responsible manner and at an approved facility specifically for that purpose. Proof of sewage removal and disposal shall be kept on file for auditing purposes.	NEMWA		Throughout construction	
	Operation Decommissioning	low to medium significance		NEMA grave	cradle to		
<b>5.13 NOISE</b>							
<b>Site establishment</b>  <b>General Construction</b>  <b>Operations</b>  <b>General decommissioning activities</b>	Construction Decommissioning	Noise has the potential to result in moderate significance impacts to sensitive receptors	Unless it is an emergency situation, non-routine noisy activities such as construction, decommissioning, start-up and maintenance, should be limited to day-time hours as far as possible.  Machines and mobile equipment used intermittently should be shut down between work periods or throttled down to a minimum and not left running unnecessarily. This will reduce noise and conserve energy. Acoustic covers of engines should be kept closed when in use or idling. Doors to generators should be kept closed when in use.	SANS10103 ECA Regulations World Bank guidelines OHSA	Noise	Throughout life of project	
	Construction Operation Decommissioning	Noise has the potential to result in low significance impacts to sensitive receptors at a small scale	Complaints register, including the procedure which governs how complaints are received, managed and responses given (refer to Section 6.3.2 of this EMPr), must be implemented, and maintained.	SANS10103 ECA Regulations World Bank guidelines OHSA	Noise	Throughout life of project	



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
	Construction Operation Decommissioning	Noise has the potential to result in low significance impacts to sensitive receptors at a small scale	Equipment to be employed should be reviewed to ensure the quietest available technology is used. Equipment with lower sound power levels must be selected in such instances and vendors/contractors should be required to guarantee optimised equipment design noise levels.	SANS10103 ECA Regulations World Bank guidelines OHSA	Noise EHS	Throughout life of project
	Construction Operation Decommissioning	Noise has the potential to result in low significance impacts to sensitive receptors at a small scale	Regular and effective maintenance of equipment are essential to noise control.	SANS10103 ECA Regulations World Bank guidelines OHSA	Noise EHS	Throughout life of project
<b>5.14 AIR QUALITY</b>						
<b>Site establishment</b>  <b>General Construction</b>	Construction Operation Decommissioning	Impacts on air quality have a moderate significance and may occur over a large area	The Holder shall comply with the National Dust Control Regulations, Promulgated under the National Environmental Management: Air Quality Act (Act 39 of 2004). If dust levels exceed the specified thresholds in terms of the dust control regulations, the Holder shall appoint a suitably qualified specialist to identify sources of the excessive dust levels and to suggest suitable and reasonable mitigation measures.	NEMAQA Dust regulations		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
<b>Operations</b>  <b>General decommissioning activities</b>	Construction Decommissioning	Impacts on air quality have a moderate significance and may occur over a large area	<p>Dust control measures should be investigated for open areas. These can consist of wet suppression, chemical suppressants, vegetation, wind breaks, etc. Wet suppression (hourly watering recommended) or chemical stabilization of unpaved roads.</p> <p>A wheel washing station to be installed at the exit point to minimise spread of construction material onto neighbouring roads.</p> <p>Construction vehicles transporting loose materials must be covered with tarpaulin to minimise dispersion of construction material during transportation.</p>	NEMAQA Dust regulations		Construction and decommissioning phase
	Construction Operation Decommissioning	Impacts on air quality have a moderate significance and may occur over a large area	The project will need an Air Emissions License (AEL). The AEL will stipulate the conditions that will need to be complied with in order to operate. Conditions will include the limits and measurements of emissions. The facility will need to ensure sufficient mitigation measures are in place in order to meet the stipulated.	NEMAQA Dust regulations		Throughout life of project
	Construction Operation Decommissioning	Impacts on air quality have a moderate significance and may occur over a large area	Speed limits will be established and enforced to minimise dust generation. When haul trucks need to use public roads, the vehicles need to be cleaned of all mud and the material transported must be covered to minimise windblown dust. Haul trucks to be restricted to specified haul roads using the most direct route.	NEMAQA Dust regulations		Throughout life of project
	Construction Operation Decommissioning	Impacts on air quality have a moderate significance and may	Machinery and equipment will be regularly serviced to ensure they are in proper working condition and to reduce risk of excessive emissions and fugitive gas emissions.	NEMAQA Dust regulations		Throughout life of project



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
		occur over a large area				
<b>5.15 IMPACTS ON TRANSPORTATION AND INFRASTRUCTURE</b>						
<b>Site establishment</b>	Construction	Impacts on transportation infrastructure and traffic can have a significant extent although typically low in significance	The Holder shall ensure that the internal haul roads are adequately maintained, including monthly scraping and removal where required. Together with road maintenance, the storm water system to direct storm water that falls within the roads shall be kept maintained.	Road Traffic Act OHSA		Throughout life of project
	Operation					
	Decommissioning					
<b>General Construction</b>						
<b>Operations</b>	Construction	Impacts on transportation infrastructure and traffic can have a significant extent although typically low in significance	On-site vehicles must be limited to approved access routes and areas (including turning circles and parking) on the site so as to minimise excessive environmental disturbance to the soil and vegetation on site, and to minimise disruption of traffic.	Road Traffic Act OHSA		Throughout life of project
	Operation					
	Decommissioning					
<b>General decommissioning activities</b>						
	Construction	Impacts on transportation infrastructure and traffic can have a significant extent although typically low in significance	All construction vehicles using public roads shall be in a roadworthy condition and their loads secured. They must adhere to the speed limits and all local, provincial and national regulations with regards to road safety and transport.	Road Traffic Act OHSA		Throughout life of project
	Operation					
	Decommissioning					
	Planning	Impacts on Gautrain transportation	The applicant must obtain the relevant approvals in terms of Section 46(3) of the Gauteng Transport Infrastructure Act before commencing with the construction of the facility, specifically	Gauteng Transport Infrastructure Act		Prior to construction commencing



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation
		infrastructure could be highly significant	<p>with respect to the pipeline connection that is proposed to pass under the Gautrain bridge, to ensure the project is compatible with the rail infrastructure. It is recommended that the applicant consult further with the Gautrain Management Agency prior to construction is ensure the project is compatible with the rail infrastructure before commencing any construction.</p> <p>All relevant stakeholders including GMA must be kept appraised of the EMI/EMC control measures and risks identified during the development of the project. Kelvin should hold EMI/EMC interface meetings between the project and GMA during development if any risk of EMI are identified.</p>			
<b>5.16 CLIMATE CHANGE</b>						
<b>Operations</b>	Construction Operation	CCIA impacts could be of high significance	The Holder will be required to report carbon dioxide equivalent (CO2e) emissions annually via the NAEIS.	NAAQS		Annual reporting
<b>5.17 PALAEOLOGY</b>						
<b>Construction activities</b>	Construction	Localized potentially moderate significance and of	<p>Implement a “chance find” protocol.</p> <p>Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts as set out in the NHRA (Act No 25 of 1999) Section 51 (1). If unearthed, under no circumstances shall any heritage, archaeological or paleontological artefact/ feature be removed, destroyed or interfered with by anyone on the site, unless such removal has been authorised by the heritage authorities.</p>	NHRA		Construction



Activities	Phase	Size and Scale of Disturbance	Mitigation Measures / Management Actions	Compliance Standards	with	Time Period for Implementation



## **6 ENVIRONMENTAL MONITORING**

### **6.1 FUNCTIONAL REQUIREMENTS OF MONITORING PROGRAMMES**

The purpose of monitoring is not merely to collect data, but to provide information necessary to make informed decisions on managing and mitigating potential impacts. Monitoring therefore serves the following functions:

- Serve as early warning system to detect any potential negative impacts;
- To provide information to feedback into management controls to avoid, prevent or minimise potential negative impacts;
- Provide quantitative data that can serve as evidence for the presence of negative impacts or the lack thereof;
- Allows for trending, modelling and prediction of future conditions or potential impacts;

Based on the above, the Holder must ensure that monitoring programmes comprise of the following (at a minimum) in order to obtain valuable environmental data;

- Environmental aspect monitoring must be a formalised procedure;
- All equipment used in monitoring must be correctly calibrated and serviced regularly;
- Samples required for analysis will be sent to an independent and accredited laboratory;
- Monitoring data must be stored;
- Data must be checked and interpreted and trending undertaken on a quarterly basis;
- Both the data and reports on environmental monitoring must be kept on record for the life of the project and where relevant provided to I&AP's; and
- The general and site-specific parameters to be monitored must be identified by an independent specialist, the authorities and where relevant I&AP's.

### **6.2 LIST OF ASPECTS THAT REQUIRE MONITORING PLANS**

The list of aspects that require on-going environmental monitoring includes the following:

- Air quality;
- Noise;
- Water quality.

It is likely that future scenarios may require the monitoring of additional or unforeseen impacts. As such, the list provided is by no means conclusive and must instead be used as a guideline for the impacts that require monitoring.

### **6.3 MONITORING PLANS FOR ENVIRONMENTAL ASPECTS**

The monitoring of various environmental aspects and the impact on them as a result of the proposed project shall take place by means of both quantitative and qualitative techniques in order to determine whether or not the requirements of the EMPr are being complied with. The importance and value of detailed environmental monitoring networks cannot be overstated.

Environmental monitoring serves as a tool to track compliance, assist with potential liability identification, and mitigation throughout the life of the proposed project. This is achieved through the provision of actual evidence-



based monitoring and reporting thereof. In essence, monitoring is a continuous data-gathering, data interpreting, and control procedure that ranges from visual inspection to in-depth investigative monitoring and reporting.

### **6.3.1 AIR QUALITY**

Monitoring requirements in terms of air quality will be stipulated in the projects Air Emissions License (AEL) once received. Compliance with MES will be proven by means of stack emission monitoring. The AEL will stipulate the pollutants that need to be measured and the frequency of the emission monitoring.

The Holder should implement the following with respect to fugitive emissions:

- Implement a Leak Detection and Repair program that includes regular inspections of all equipment and pipelines to identify fugitive gas emissions.
- Conduct routine acoustic leak detection surveys along pipelines and at critical points within the CCGT plant to identify potential leaks.
- Establish a monitoring schedule that includes frequent inspections of high-risk areas, such as compressor stations, valve stations, and turbine seals.
- If a leak is detected, it must be documented and immediately rectified using appropriate repair methods to prevent further emissions.
- Ensure that all detected leaks are repaired within a specified time frame, and re-inspect the area post-repair to confirm that the leak has been fully resolved.
- Maintain detailed records of all monitoring activities, detected leaks, and repair actions for reporting to regulatory authorities

### **6.3.2 NOISE**

It is suggested that noise monitoring be undertaken during the first three months of the operations to verify and validate the modelling results from the noise study and if necessary adjust mitigation measures. In the event that noise related complaints are received short term ambient noise measurements, at the complainant, monitoring should be conducted as part of investigating the complaints. The results of the measurements should be used to inform any follow up interventions. The investigation of complaints should include an investigation into equipment or machinery that likely result or resulted in noise levels annoying to the community. This could be achieved with source noise measurements.

The following procedure should be adopted for all noise surveys (for complaints): Any surveys should be designed and conducted by a trained specialist.

- Sampling should be carried out using a Type 1 Sound Level Meter (SLM) that meets all appropriate IEC standards and is subject to annual calibration by an accredited laboratory.
- The acoustic sensitivity of the SLM should be tested with a portable acoustic calibrator before and after each sampling session.
- Samples sufficient for statistical analysis should be taken with the use of portable SLM's capable of logging data continuously over the time period. Samples, representative of the day- and night-time acoustic environment should be taken.
- The following acoustic indices should be recorded and reported: LAeq (T), statistical noise level LA90, LAFmin and LAFmax, octave band or 3rd octave band frequency spectra.
- The SLM should be located approximately 1.5 m above the ground and no closer than 3 m to any reflecting surface.
- Efforts should be made to ensure that measurements are not affected by the residual noise and extraneous influences, e.g. wind, electrical interference and any other non-acoustic interference, and that the instrument is operated under the conditions specified by the manufacturer. It is good practice



to avoid conducting measurements when the wind speed is more than 5 m/s, while it is raining or when the ground is wet.

- A detailed log and record should be kept. Records should include site details, weather conditions during sampling and observations made regarding the acoustic environment of each site.

### **6.3.3 WATER QUALITY**

Kelvin has implemented a surface water monitoring programme that includes daily monitoring of the effluent and weekly monitoring at the effluent discharge point into the unnamed tributary as well as at points up and downstream of this in the Modderfonteinspruit. Any additional surface water monitoring will need to be undertaken in line with the requirements stipulated in the Water Use License (WUL), once received.

All cooling water from the CCGT power plant must be treated to meet the standards stipulated in the relevant Water Use License (WUL) or General Authorisation before being discharged into the environment. The treatment process should include appropriate filtration, chemical neutralization, and temperature regulation to ensure compliance with regulatory water quality parameters, such as pH, temperature, dissolved oxygen, and contaminant levels. Regular audits and maintenance of the treatment facilities should be conducted to ensure consistent compliance.

A comprehensive water quality monitoring program must be established to continuously assess the quality of cooling water both before and after treatment, as well as at the discharge point into the environment. Monitoring should include parameters specified in the WUL or General Authorisation, such as pH, temperature, dissolved oxygen, and specific contaminants. The results should be recorded and reported to the relevant authorities regularly, and any deviations from compliance should trigger immediate corrective actions.