DRAFT SCOPING REPORT FOR THE PROPOSED CONSTRUCTION OF THE LETHABO POWER STATION EAST COOLING WATER TREATMENT PLANT
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**Date:** 20 November 2015  
**Version:** 02  
**Report Title:** Draft Scoping Report for the Lethabo East Cooling Water Treatment Plant
EXECUTIVE SUMMARY

Introduction
The Lethabo power station, which is situated in the Northern Free State Province, is currently serviced by one Cooling Water Treatment Plant (CWTP) which is located on the western side of the station. This system treats the entire power station’s requirement for cooling water to maintaining the water management and cooling water chemistry for the station. With only one CWTP the following challenges are experienced:

- The current plant cannot be taken out for maintenance because there is no spare capacity for treatment. The plant is therefore being operated at maximum availability, which may impact negatively on the Long Term Plant Health (LTPH).
- In the event of a half-station shutdown, the cooling water chemistry on the east side of the power station cannot be maintained as the transfer system is taken offline. This will allow the salt and scale concentrations to increase thus reducing the thermal efficiency of the units and will put the LTPH of the condensers at risk.
- The west side lime softening clarifiers are stressed as they are operating at maximum availability when the station is on full load.

The above, therefore, necessitates the construction of a CWTP on the east side of the station. The proposed facility will improve the overall cooling water availability and reliability by sharing the total quantity of water treated. The overall quantity of cooling water will remain the same providing opportunity for critical and routine maintenance.

Description of CWTP
The proposed CWTP will be built within the footprint of the power station. The plant will remove dissolved and suspended solids using lime softening and reverse osmosis with pre-treatment from a fraction of the cooling water to remove blow down and ensure compliance of the cooling water chemistry with cooling water standards. The required footprint of CWTP is between 6400m² & 10000m².

A maximum of 17Ml/day of water shall be extracted for lime softening treatment from the cooling water circulating system and existing pipelines will remove a maximum of 10Ml/day of clarified water through to ultrafiltration with the remainder sent to cooling water tower ponds on the eastern side of the power station. The ultra-filtered water will then be fed to the reverse osmosis section and permeate generated from section will be removed to the cooling tower ponds. The desalination plant is designed for a total permeate flow of 7.5 Ml/day at a recovery rate of 75-80%. The effluent from this process will be sent via pipeline to the existing ash
conditioning system where the effluent will be mixed with the ash generated by the power station in order to dampen the ash before it is disposed of at the ash disposal site.

ALTERNATIVES CONSIDERED
While the requirement for assessment of alternatives includes, siting, process, technology, etc., the EIA process for this project could only focus on siting alternatives.

Siting alternative
There are four siting alternatives that have been proposed by Eskom for the location of the CWTP. The ‘no go’ alternative will also be assessed.

Legislative environment
The proposed construction of the CWTP will undergo a Scoping and EIA process in terms of the National Environmental Management Act (Act No. 107 of 1998) Environmental Impact Assessment (EIA) Regulations of 2014, as published in Government Notices No. R 982, 983, 984 and 985. In addition, the legislative requirements pertaining to waste and water management were considered as the CWTP may have an impact in terms of waste generation and disposal and impacts on water resources.

Pre-application meetings were held with the Department of Environmental Affairs and the Department of Water and Sanitation. It was confirmed at these meetings that water use licence and waste management licence were not required. Therefore, only an application for environmental authorisation was required for this project.

Public participation
Site notices were placed at the Lethabo power station on 30th October 2015 and interested and affected parties have been informed about the project with document packs, including the Background Information Document (BID) for the project, being sent to all stakeholders on the database that has been compiled for this project.

The availability of the Draft Scoping Report (DSR) was advertised in the Citizen Newspaper on the 20th of November 2015 and the Sasolburg Ster and Vereeniging Ster News newspapers on the 27th of November 2015. The DSR is available for public comment from the 23rd of November 2015 to the 12th of January 2016 at the Vereeniging and Evaton Public Libraries.
**Environmental impacts of CWTP**

Details on the baseline receiving environment were investigated and potential impacts on the receiving environment that may occur as a result of the project were identified. The potential impacts related to the construction, operation and decommissioning of the CWTP and included geotechnical impacts relating to the soil conditions of the project area; impacts on fauna and flora, heritage resources, water resources as well as socio-economic impacts and visual impacts of the proposed CWTP.

**Plan of Study for EIA**

The Plan of Study for EIA describes how the EIA phase will proceed and includes details of the specialist studies required to be undertaken during the EIA phase. The recommended specialist studies to be undertaken in the EIA phase of the project are:

- Hydrological assessment
- Geotechnical assessment

I am of the opinion that these are not required since these studies were done for the PV Plant project. These Reports will be included in the write-up of the EIA.

The EIA report will be undertaken in accordance with the approved Plan of Study and an environmental management programme (EMPr) will also be prepared for the management and mitigation of potential impacts during the construction, operation and decommissioning phases of the CWTP.
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LIST OF ABBREVIATIONS

CCR     Comments and Response Report
CSW     Continuous Surface Wave
CWTP    Cooling Water Treatment Plant
DEA     Department of Environmental Affairs
DEIAR   Draft Environmental Impact Assessment Report
DM      District Municipality
DPSH    Dynamic Probe Super Heavy
DSR     Draft Scoping Report
DWS     Department of Water and Sanitation
EA      Environmental Authorisation
EAP     Environmental Assessment Practitioner
EIA     Environmental Impact Assessment
FSR     Final Scoping Report
GN      Government Notice
IDP     Integrated Development Plan
IWWMP   Integrated Water and Waste Management Plant
HIA     Heritage Impact Assessment
LM      Local Municipality
LTPH    Long Term Plant Health
NEMA    National Environmental Management Act
NHRA    National Heritage Resources Act
NEMWA   National Environmental Management: Waste Act
NWA     National Water Act
PGDS    Provincial Growth and Development Strategy
PoS     Plan of Study
PPP     Public Participation Process
PSDF    Provincial Spatial Development Framework
RO      Reverse Osmosis
SANBI   South African National Biodiversity Institute
WML     Waste Management Licence
WUL     Water Use Licence
1. INTRODUCTION

Lethabo power station operates an open cooling system consisting of six concrete, wet and hyperbolic cooling towers. Cooling towers 1, 2 and 3 are situated on the west side of the station and cooling towers 4, 5 and 6 are located on the east side of the station. The power station is currently serviced by one cooling water treatment plant (CWTP) which is located on the western side of the station. This system treats the entire power station’s requirement for cooling water as well as maintaining the water management and cooling water chemistry for the station.

1.1 Need and desirability of project

The new CWTP is required for the following reasons:

- With only west side treatment the current treatment plant cannot be taken out for maintenance because there is no redundancy. Therefore the plant is being operated at maximum capacity, which may impact negatively on the Long Term Plant Health (LTPH).

- In the event of a half station shutdown, the cooling water chemistry on the east side of the power station cannot be maintained as the transfer system will be offline. This will put the LTPH of the condensers at risk because the dissolved salt increase will cause corrosion to metal components, aggression of concrete components and scale in the condenser tubes thus reducing thermal efficiency.

- The west side lime softening clarifiers are stressed as they are operating at maximum availability when the station is on full load. This presents several operational and maintenance challenges.

This inadequacy, therefore, necessitated the installation/building of a cooling water treatment facility on the east side of the station. The proposed facility will improve the overall cooling water availability and reliability by providing opportunity for critical and routine availability.

2. LOCATION OF PROJECT

The Lethabo Power Station was built in 1814 in the northern Free State Province. It is situated within the Metsimaholo Local Municipality which forms part of the Fezile Dabi District Municipality. The power station is located east of Viljoensdrif and south-east of Vereeniging and is situated close to the Vaal River at the following co-ordinates S26°44'24.94" and E27°58'29.89". The site can be accessed from the R716 road.
Figure 1: Location of Lethabo power station relative to Vereeniging
3. DESCRIPTION OF PROPOSED ACTIVITY

The Applicant, Eskom, proposes to construct a CWTP on the east side of the Lethabo power station within the footprint of the power station (see Fig. 2 below) to augment the cooling water treatment facilities for the power station, thus allowing for maintenance of the existing CWTP whilst continuing with the treating of cooling water. The plant will remove the salt load equivalent of the maximum make-up to the system, so that the cycles of concentration are maintained at the constant level.

When Lethabo power station was originally built in the 1980s, it was planned that a CWTP be built on the east side of the station together with the existing CWTP on the west side. However, due to a number limitations the east plant was never constructed. Eskom proposes to build the new CWTP on the site where it was originally intended.

The proposed CWTP will remove dissolved and suspended material using lime softening and reverse osmosis from a fraction of the cooling water to reduce blow down and ensure compliance of the cooling water chemistry with the cooling water standards.

The required footprint of CWTP is between 6400 m² & 10000 m². A maximum of 17ML/day of water shall be extracted for lime softening treatment from the cooling water circulating system and existing pipelines will remove a maximum of 10ML/day of clarified water through to ultrafiltration with the remainder sent to cooling water tower ponds on the eastern side of the power station.

The ultra-filtered water will then be fed to the reverse osmosis section and permeate generated from section will be removed to the cooling tower ponds. The desalination plant is designed for a total permeate flow of 7.5 ML/day at a recovery rate of 75-80%.

Reject and salt concentrated water are in the same stream. The other stream is chemical effluent generated during the maintenance procedures of the desalination plant. The effluent from this process (reverse osmosis reject) will be sent via pipeline to the existing ash conditioning system at the power station where the effluent will be mixed with the ash generated by the power station in order to dampen the ash and act as a form of dust suppression before it is disposed of at the ash disposal site.
3.1 Siting alternatives for CWTP

The criteria used to identify the siting alternatives were as follows:

- An area that could meet the required footprint of between 6400m² and 10000m².
- Capital Cost
- Operational Cost
- Expandability
- Ability to use existing infrastructure

Existing access proximity to required interface points

There are four siting alternatives for the proposed CWTP. Figure 3 below shows an overall view of the project showing the proposed siting alternatives for the CWTP. Figures 4 to 7 indicate that specific location of each of the sites.
3.1.1 Siting alternatives for CWTP

The alternative sites all fall within the precinct of the Lethabo Power Station.

Figure 3: Location of potential sites for CWTP

3.1.2 Alternative site 1

This site is situated between cooling towers 4 and 5 and south of an access road as depicted below in Fig. 5.
3.1.3 Alternative site 2

Alternative site 2 is also situated between cooling towers 4 and 5 but north of and adjacent to alternative site 1 (see below).

3.1.4 Alternative site 3

Alternative site 3 is situated between cooling towers 5 and 6 of the Lethabo power station as indicated in Fig. 7 below.

Figure 4: Alternative site 1

Figure 5: Alternative site 2

Figure 6: Alternative site 3
3.1.5 Alternative site 4
Alternative site 4 is situated to the west of cooling tower 4. There is existing infrastructure for the CWTP. The infrastructure was constructed when the power station was built as the original plan was to have CWTPs on both the eastern and western side of the station but due to various reasons, only the western CWTP was built.

![Figure 7: Alternative site 4](image)

3.1.6 No go alternative
If the CWTP is not constructed, then the area where it is proposed to be built will remain undeveloped and infrastructure previously built for it will remain unutilised. Without the additional CWTP, the existing CWTP on the western side of the power station, which is running at maximum availability, will remain the only plant servicing the entire station. Without a second CWTP, the existing plant, including the lime softening clarifiers cannot be maintained and this will result in operational issues for the power station and impact negatively on the LTPH of the equipment and infrastructure.
4. LEGISLATIVE ENVIRONMENT

The proposed construction of the Lethabo East CWTP will undergo a Scoping and EIA process that will be undertaken in terms of the National Environmental Management Act (Act No. 107 of 1998) Environmental Impact Assessment (EIA) Regulations of 2014 that were promulgated on 04 December 2014, which were published in Government Notices (GN) No. R 982, 983, 984 and 985. In addition, the legislative requirements pertaining to waste and water management will be considered as the proposed activity may have an impact on the environment in terms of waste disposal and impacts on water resources. Pertinent legislation regarding the proposed development is captured below.


The Constitution of South Africa states that everyone has the right to an environment that is not harmful to their health or wellbeing and to have the environment protected for the benefit of present and future generations, through reasonable legislation and other measures that: (i) prevent pollution and ecological degradation, (ii) promote conservation, and (iii) secure sustainable development and use of natural resources while promoting justifiable economic and social development.

This is interpreted to mean that all developments should not infringe on or undermine the constitutional right to a safe and healthy environment of all citizens, as well as the ability of future generations to enjoy the same right.

4.2 National Environmental Management Act (No. 107 of 1998)

The EIA Regulations, 2014, promulgated in terms of Section 24(5) of the National Environmental Management Act (NEMA) are divided into four Schedules: R982, R 983 and R 984 and R 985.

Schedule R 982 describes the procedures, requirements and timeframes for the undertaking of Environmental Impact Assessments. Schedule R983 defines activities which will trigger the need for a Basic Assessment and R 984 defines activities which trigger a Scoping and EIA process. If activities from both schedules are triggered, then an EIA process will be required. Regulation 985 defines certain additional listed activities per province for which a Basic Assessment would be required.
Listed activities from these Regulations which will be triggered by the proposed project are provided in the table below. In terms of the EIA Regulations of 2014, a Scoping and EIA process is required for the proposed development.

Table 1: List of activities applicable to Lethabo East CWTP

<table>
<thead>
<tr>
<th>Listed activity as described in GN R. 983 and GN R. 984</th>
<th>Description of project activity that may trigger the listed activity</th>
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<tr>
<td><strong>GN R.983 Item 10:</strong> The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes (i) with an internal diameter of 0.36 metres or more (ii) with a peak throughput of 120 litres per second or more</td>
<td>Pipelines transporting process effluent (sludge, brine water) may exceed 1000m in length and have a throughput of 120 litres or more</td>
</tr>
<tr>
<td><strong>GN R.983 Item 16:</strong> The development and related operation of facilities for the desalination of water with a design capacity to produce more than 100 cubic metres of treated water per day.</td>
<td>The proposed desalination plant will be designed for a permeate flow of 7500 cubic metres per day</td>
</tr>
<tr>
<td><strong>GN R.983 Item 45:</strong> The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure- (i) has an internal diameter of 0.36 metres or more; or (ii) has a peak throughput of 120 litres per second or more; and (a) where the facility or infrastructure is expanded by more than 1000 metres in length;</td>
<td>Expansion of existing pipelines between the CWTP and the cooling towers with a peak throughput of 120 litres per second</td>
</tr>
<tr>
<td><strong>GN R.984 Item 25:</strong> The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of 15000 cubic metres or more.</td>
<td>The proposed water treatment work is expected to treat 17000 cubic metres of water per day</td>
</tr>
</tbody>
</table>

4.3 National Water Act (Act No. 36 of 1998)

The National Water Act (NWA) identifies consumptive and non-consumptive water uses which must be authorised under a tiered authorisation system. Section 27 of the NWA specifies that the following factors regarding water use authorisation must be taken into consideration:

- The efficient and beneficial use of water in the public interest;
- The socio-economic impact of the decision whether or not to issue a licence;
- Alignment with the catchment management strategy;
- The impact of the water use, resource directed measures; and
- Investments made by the applicant in respect of the water use in question.
Section 21 of the National Water Act identifies listed activities for which a Water Use License (WUL) should be obtained. The Section 21 listed activities are:

(a) Taking water from a water resource;
(b) Storing water;
(c) Impeding or diverting the flow of water in a water course;
(d) Engaging in a stream flow reduction activity contemplated in Section 36;
(e) Engaging in a controlled activity identified as such in section 37(1) or declared under Section 38(1);
(f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
(g) Disposing of waste in a manner which may detrimentally impact on a water resource;
(h) Disposing in any manner water which contains waste from, or which has been heated in any industrial or power generation process;
(i) Altering the bed, banks, course or characteristics of a watercourse;
(j) Removing, discharging, or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
(k) Using water for recreational purposes.

A pre-application meeting was held with the Gauteng Department of Water and Sanitation (DWS) on 23 September 2015 where the proposed project was discussed with DWS officials. DWS was informed that the Lethabo power station has an existing Water Use Licence (WUL) that was issued in 2011 and that applies to sections 21(a), 21(b) and 21(g) of the NWA. The proposed CWTP will not result in an increased abstraction of water from the Vaal River nor there be an increase in volume of waste generated as the water volume treated will not increase with the new plant, the new plant will merely to share the load and allow redundancy.

As a result of meeting, the Applicant and Environmental Assessment Practitioner (EAP) were informed that:

- A WUL was not required
- The power station’s existing Integrated Water and Waste Management Plan (IWWMP) would need to be updated with the information of the proposed east CWTP in order to document the potential impacts and mitigation measures associated with the CWTP prior to the commencement of project construction

The purpose of the National Environmental Management: Waste Act (NEMWA) is to regulate waste management in order to:

- protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development;
- to provide for institutional arrangements and planning matters;
- to provide for national norms and standards for regulating the management of waste by all spheres of government and to provide for specific waste management measures;
- to provide for the licensing and control of waste management activities;
- to provide for the remediation of contaminated land;
- to provide for the national waste information system;
- to provide for compliance and enforcement and to provide for matters connected therewith.

In 2013, the list of waste management activities that have, or are likely to have, a detrimental effect on the environment were amended in terms of GN 921 in terms of section 19(2) of NEMWA. These activities require a waste management licence (WML) in accordance with section 20(B) of NEMWA.

The CWTP will produce sludge, reverse osmosis (RO) reject and chemical effluent. The RO reject and sludge will result from normal operation of the CWTP and the chemical effluent will be produced during routine maintenance of the CWTP.

A pre-application meeting was held on 16 October 2015 with the Integrated Authorisation Unit of DEA to discuss, amongst others, the requirements of DEA in terms of waste management. After discussion, the official from the waste section of DEA informed the Applicant that a WML would not be required as the facility was operating as a pre-existing lawful-user and this project will be seen as part of the current activity since no additional waste will be generated due to the load that will be shared.
4.5 National Heritage Resource Act 1999 (No. 25 of 1999)

According to section 38(1) of the National Heritage Resources Act (NHRA), any person who intends to undertake a development categorised as—
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50 m in length;
(c) any development or other activity which will change the character of a site—
   (i) exceeding 5 000 m² in extent; or
   (ii) involving three or more existing erven or subdivisions thereof; or
   (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
   (iv) the costs of which will exceed a sum set in terms of regulations by the South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority;
(d) the re-zoning of a site exceeding 10 000 m² in extent; or
(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority
must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

The character of the site, in my opinion will remain industrial since the area below the surface if filled with infrastructure. However, a desktop HIA study will be done for due diligence.

4.7 Regional plans

The following regional plans will be considered during the execution of the EIA:
- Spatial Development Frameworks
- Integrated Development Plans

4.7.1 Free State Provincial Spatial Development Framework (PSDF)

The Free State PSDF is a provincial spatial and strategic planning policy that responds to and complies with the National Development Plan Vision of 2030 and the National Spatial Perspective. Amongst others, the PSDF is a:
- A policy for ensuring environmental sustainability and for the aligning/integrating of land use activities in accordance with defined sustainability objectives; and
- A strategy towards enhancing the well-being of the people and environment of the province.
- Together with the Provincial Growth and Development Strategy (PGDS), the PSDF is a critical instrument in guiding the use of the resources of the provinces that will ensure sustainable outcomes based on the development needs and priorities of the province.

Throughout the document provision of electricity remains a core objective. For example, Pillar 2 of the PGDS refers to education, innovation and skills development with one of the objectives being the provision of new basic infrastructure at local level including electricity and sanitation.

**4.7.2 Fezile Dabi District Municipality Integrated Development Plan**

The Integrated Development Plan (IDP) (2014-2015) articulates the short-term, medium, and long-term approach in discharging the Municipality’s responsibility to accelerate service delivery. It lists the achievements and goals of the Municipality for the coming financial year including the creation of decent work and elimination of poverty through the growth of the municipal economy.

According to the IDP, the average unemployment rate in 2007 within Fezile Dabi District Municipality was 33.6% hence there is an urgent need to create employment opportunities, in order to reduce unemployment and associated poverty. The Fezile Dabi DM is the district where households have the highest access (91.7%) to electricity in the Free State.

**4.7.3 Metsimaholo Local Municipality Integrated Development Plan (2014/2015)**

The IDP is the master plan for the LM which provides an integrated and sound framework for the development of the municipal area by improving coordination of development programmes of the municipality and other spheres of government to improve the lives of the people living in this area. The unemployment rate in the LM is slightly lower than the DM at 32.1% hence one of the programmes is to improve the economy of the municipality in order to improve work opportunities.
5. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Senkosi Consulting cc was appointed by Eskom to undertake the Environmental Impact Authorisation (EIA) process for the proposed CTWP. Senkosi Consulting is a wholly black owned closed corporation, officially registered in 2007. The company is led by young, dynamic black South Africans from previously disadvantaged communities. Senkosi Consulting has a vision of becoming the preferred professional service provider of choice within South Africa and beyond and strives for active involvement and participation in the main stream economy of South Africa by providing opportunities to historically marginalized individuals through increased participation of technical expertise within the fields of engineering, environment and natural sciences.

Senkosi Consulting has conducted several studies and obtained authorisations in the environmental field. In 2010 Senkosi Consulting was appointed by Eskom to conduct a Scoping and EIA for the SOL B 400/123kV substation and associated 3x 400kV turn-in turn-out power lines near Secunda in Mpumalanga Province. The organisation also developed a number of Environmental Management Programmes (EMPrs) for Eskom substations including Olien, Ferrum, Snowdon and Mercury. In 2013, Senkosi Consulting was appointed to conduct the specialist walk down and compile the associated EMPr for the first 120km of the Masa-Ngwedi 765kV and 400kV power lines in the Limpopo Province. During the same year, Senkosi Consulting was appointed by Eskom Distribution to undertake the Water Use Licence Application (WULA) and EMPr for the Glen Austin and President Park 11kV feeder upgrade in Gauteng.

The curriculum vitae of the team members as listed below is attached as Appendix 5-1.

Table 2: Project team members

<table>
<thead>
<tr>
<th>Name</th>
<th>Qualifications</th>
<th>Experience</th>
<th>Duties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. S. Nkambule</td>
<td>• BSc (Environmental Management)</td>
<td>15 years</td>
<td>Project Leader</td>
</tr>
<tr>
<td>Ms J. Beater</td>
<td>• MA (Heritage Studies)</td>
<td>20 years</td>
<td>EAP</td>
</tr>
<tr>
<td></td>
<td>• MSc (Env. Management dissertation – outstanding)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mr. M. Mahlangu</td>
<td>• BSc Honours (Botany and Plant Ecology)</td>
<td>20 years</td>
<td>Public Participation</td>
</tr>
</tbody>
</table>
6. SCOPING AND EIA PROCESS

The EIA process comprises two main phases: i.e. Scoping Phase and EIA Phase. The EIA process culminates in the submission of an EIA Report and an Environmental Management Programme (EMPr) to the competent authority for authorisation.

The Scoping Phase for the proposed Lethabo East CWTP has been undertaken in accordance with GNR. 982 of 4 December 2014 in terms of sections 24(5) and 44 of NEMA (Act No. 107 of 1998). This scoping process is aimed at identifying potential issues and impacts associated with the proposed project, and defining the extent of studies required that will take place during the EIA phase.

6.1 Scoping and EIA process

The Scoping and EIA process has commenced. A pre-application meeting was held on 16 October 2015 with the Integrated Authorisation Unit of the National Department of Environmental Affairs (DEA) to discuss the environmental process to be followed and waste management requirements for the proposed CWTP. The result of the meeting was that a waste management licence was not required hence only an environmental authorisation was required and that the EIA unit of the Department would deal the project. The minutes of the meeting are attached as Appendix 7-1.

Figure 8: Simple depiction of Scoping and EIA process.

An application has been submitted to the DEA; a draft scoping report (DSR) has been compiled, and the public participation process for the project has commenced with advertising the project in local and regional newspapers; the placement of notices on site and distribution of site notices BIDs to directly affected landowners as well as other interested and affected parties (I&APs).
6.2 Commenting authorities

Copies of the reports generated for this project will be sent to the following authorities for their comment and input:

- Free State Department of Economic Development, Tourism and Environmental Affairs (DETEA) as the power station is situated within the Free State Province.
- Free State Department of Water and Sanitation.
- Free State Provincial Heritage Resources Agency (PHRA) / South African Heritage Resources Agency (SAHRA): The PHRA is responsible for commenting on heritage issues, however, due to capacity issues the PHRA may refer the project to SAHRA for comment.
- Metsimaholo LM in which the power station and proposed project falls under Fezile Dabi DM (as above)
7. PUBLIC PARTICIPATION PROCESS

7.1 Introduction

Public participation forms a continuous part of the EIA process; starting from the beginning of the EIA up until the end of the appeal period after a decision has been given by the authority. To this effect, Interested and Affected Parties (I&APs) are given the opportunity to be part of the decision-making process for the proposed development. The main objective of public participation process is to provide I&APs with information to allow them to meaningfully contribute to the study process by way of:

- Identifying issues of concern, providing suggestions for enhanced benefits and alternatives;
- Contributing local knowledge and experience; and
- Verifying that their issues have been accurately captured.

This section outlines the activities undertaken to date and the way forward until the environmental authorisation is provided and through the appeal period. The aim of this PPP report is therefore to:

- Provide a description of the public participation process conducted;
- Provide a list of comments and issues raised;
- Give feedback to I&AP’s on the process’ findings during the Scoping Phase and recommendations; and
- Outline the way forward.

7.2 Pre-consultation meetings

Senkosi Consulting had pre-consultation meetings with the DEA and the DWS (see Appendix 7-1 for minutes of these meetings and associated attendance registers).

- The meeting with DWS concluded that an application for a WUL was not required for this project;
- The purpose of the meeting with DEA was to get clarity on whether to submit an integrated application form (waste and EIA application) or only EIA application form. It was advised that only an environmental authorization was required as an application for a waste management licence would not be required as the power station was operating with an existing lawful licence therefore only the EIA application will be lodged with the authority.
7.3 Database establishment

NEMA defines I&APs as those people, groups of people or organizations that have an interest in or are affected by the proposed activity, and any organ of state that may have jurisdiction over any aspect of the activity. Names and details of identified I&AP’s are recorded in a register of stakeholders.

For this project, the database of I&APs will be generated after a fair and transparent registration process and will be continuously updated during the EIA process until the end of appeal period. The database consists of the following stakeholders:

- Adjacent Landowners
- NGOs
- Local Municipality
- District Municipality
- Provincial Authorities; and
- Government Departments.

The number of I&APs is expected to increase after public meetings and the advertisement of the proposed project, which will be done in and around the community surrounding the Lethabo Power Station on the 23rd of November 2015. (see Appendix 7-2 for stakeholders’ database).

7.4 Notification of and communication with I&APs

Information relating to the project was sent to all registered I&APs via email on 30 October 2015. The information included a Background Information Document (BID), Comment Sheet, and letter that encouraged stakeholders to participate in the project. It is hoped that more stakeholders will register as I&APs once the project is advertised and the first round of meetings are held (see Appendix 7-5 for a copy of documents distributed to I&APs).

Senkosi Consulting telephonically contacted stakeholders to confirm that they had received the information documents package and encouraged them to respond. A request to stakeholders that they must acknowledge receipt of information documents package will was also sent out to stakeholders via emails. All responses received will be adequately addressed in the Comments and Responses Report (see Appendix 7-3).
7.5 Site notices

Several site notices were placed at different strategic locations within the premises of the power station (see Appendix 7-4).

7.6 Advertising of project

It is required by law (NEMA 2014 EIA Regulations) that the project must be advertised in one of the local newspapers. The availability of Draft Scoping Report (DSR) was advertised in the Citizen Newspaper on the 23rd of November 2015 and in the Sasolburg Ster and Vereeniging Ster News newspapers on 27th of November 2015 and I&APs were will be given 30 days to comment (see Appendix 7-5 for a copy of the advertisement).

7.7 Focus group meetings

The new development is to be constructed inside the premises of the power station where access is strictly controlled. The PP Team is of the opinion that the general public is unlikely to be affected by the project and the general public will not easily notice the new development. Hence, stakeholder consultation meetings will take the form of Focus Group meetings and if necessary one-on-one meetings including public meetings. Minutes of meetings held will be circulated to all attendees for confirmation before including them in the Final Scoping Report (FSR). Comments and issues raised will be captured in the Comments and Response Report and will be included/appended in the FSR.

7.8 Public review of Draft Scoping Report

The public review period for the DSR will be from the 23rd of November 2015 to the 12th of January 2016. During the review period there will be meetings to present the findings and to allow the study team to interact with stakeholders.

Newspaper advertisement and emails will be used to notify stakeholders of the opportunity to review the document and to attend meetings. The DSR will be placed at the Evaton Public Library and the Vereeniging Public Library where they will be easily accessed by the public. An electronic version of the DSR will be distributed to I&APs on request.
7.9 Comments and response report

The comments received in response to the announcement via the distribution of the BIDs, placement of site notices and advertisements, as well as comments received at the focus group meeting will be captured in the Comments and Response Report (CRR). It is expected that the EAP and Eskom will address all concerns received before incorporating the CRR into the Final Scoping Report. At the time of issuing the DSR there were no comments and responses to record on the CRR hence there is no CRR at this stage.

The consultation process to be followed in the study will be guided by Chapter 6 of NEMA and the main focus will always be but not limited to the involvement of all I&AP’s and key government departments. Based on the consultation process undertaken to date, the public participation team is confident that a robust and transparent public consultation process has been followed.
8. ENVIRONMENTAL ATTRIBUTES OF PROJECT AREA

Details on the baseline receiving environment in which this project occurs and potential environmental issues are addressed in this section. Possible impacts on the receiving environment which may occur as a result of the project are also addressed in this section.

The potential impacts identified during the Scoping Phase will be assessed during the EIA Phase to determine the significance of these impacts and potential mitigation measures will be provided to avoid the impact, or to minimise the impact. Potential rehabilitation measures will also be provided for impacts which cannot be avoided. All mitigation and rehabilitation measures will be incorporated into the EMP which should be implemented during the construction, operation and decommissioning phases of the proposed project.

8.1 Climate

The area receives about 650 - 750 mm of rain on average per year. From May to September, rainfall is minimal, with most rainfall occurring from late October to March, peaking between November and January. Temperatures in summer peak during December and January at a daily average of 26°C, with an average daytime temperature of 17°C for June. During July, night temperatures are on average -1°C, with frosts during winter common. (Mucina and Rutherford, 2006). According to the draft 2014/2015 IDP of the Fezeli Dabi DM, the area has an evaporation rate of 1600mm to 2100mm per annum.

8.2 Geology and soils

According to the published 1:250 000 Geological Map of Wes-Rand (Sheet number 2626), the area is predominantly underlain by sandstone, shale and coal of the Vryheid Formation, Ecca Group, Karoo Supergroup. Dolerite is, also, indicated and was intruded into the Karoo Supergroup rocks during the Jurassic Period. Aeolian sand has subsequently, during the Cenozoic Era, been deposited over the dolerite and Karoo rocks (BKS 2012:2).
In addition, the presence of medium to highly expansive clays across the site was also highlighted as a matter of concern. Expansive clays exhibit volumetric change with a change in moisture content. Such materials expand, or heave, when wet and shrink when dry. The design of any structures, and their foundations, on such material needs to take cognisance of the movement which could occur. The calculated heave is in the order of 40mm to 65mm (BKS 2012:2).

8.3 Vegetation

The study sites fall within the original extent of the Central Free State Grassland as defined by Mucina and Rutherford (2006). The Central Free State Grassland (Unit Gh 6) is a relatively short grassland on undulating plains. In its original form, it is dominated by Themeda triandra whilst Eragrostis curvula and E. chloromelas become more dominant in degraded habitats. Severely degraded clayey bottomlands are often dominated by dwarf karroid shrubs, whilst riverine areas and severely overgrazed/trampled low-lying areas are prone to encroachment by Acacia karroo (Mucina and Rutherford 2006). This vegetation type is not officially listed as a threatened ecosystem, but it is regarded as vulnerable (Mucina and Rutherford 2006) as large portions have being transformed through cultivation or by the construction of dams, with only small portions protected such as in the Rustfontein Dam Nature Reserve.
A total of 1432 plant species have been recorded in the Sasolburg/Vereeniging Area according to the SANBI database. It is unlikely that many of these species will occur within the project area due to the highly disturbed nature of the project area. Of the recorded species, 32 species have a red-data status. It is highly unlikely that the presence of these species will occur on site due to the disturbed nature of the area. Alien invasive species may be present as a result of previous disturbance to the area. The current condition of the project area is one of sparse grass cover and several invasive tree species together with existing infrastructure including cooling towers (see Fig. 10 below).

Figure 10: Vegetation in project area

A list of all vertebrate species (reptiles, birds, and mammals) that could occur in the subject study area according to the ADU and SANBI databases is presented in Table 3 below. Due to the transformation and disturbance of the proposed project site, it is not expected that any of the listed species breed or depend on the proposed project area for survival.
Table 3: Red data terrestrial vertebrates that could occur (ADU database)

<table>
<thead>
<tr>
<th>Common name</th>
<th>Species name</th>
<th>Conservation status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reptiles - Serpents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chiroptera - Bats</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myotis tricolor</td>
<td>Temminck's Myotis</td>
<td>Near Threatened</td>
</tr>
<tr>
<td>Rodentia - Rodents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemniscomys rosalia</td>
<td>Single-Striped Grass Mouse</td>
<td>Data Deficient</td>
</tr>
<tr>
<td>Rhinolophus blasii</td>
<td>Blasius's Horseshoe Bat</td>
<td>Vulnerable</td>
</tr>
</tbody>
</table>

Although it is not anticipated that the proposed development will impact on sensitive or protected biodiversity due to the highly disturbed nature of the project area, an assessment will confirm this.

### 8.4 Surrounding land uses and visual aspects

The proposed CWTP falls within the footprint of the Lethabo power station. The Vaal River is situated approximately 1 km from the project area. To the west of the power station is the small settlement of Viljoensdrif and to the north-west the industrial town of Vereeniging.

The surrounding areas especially to the north and north-west are heavily industrialised together with sprawling urban/residential development. East and south of the power station agricultural activities still take place. Water from the Vaal River is used to irrigate farm lands. To the south-west of the power station, the industrial town of Sasolburg can be found where the Sasol petrochemical refinery is located. See Fig. 8 below.

To the immediate west and south of the power station, a number of roads are located including the R82 that goes to the town of Koppies and the R716 that goes to Deneysville and to the Vaal Dam.

The proposed CWTP is situated in an area especially to the south east of the main Power Station building that is highly industrialised and urbanised as well as being situated close to the cooling towers that are 164m in height effectively dwarfing the CWTP. In addition, the location of the CWTP on the eastern side of the power station away from access roads and between the power station and Vaal River, the closest activities take place east of the Vaal River thereby limiting its impact to the power station.
Figure 11: Land uses around Lethabo power station
8.5 Heritage

The wider area surrounding the project area has extensive history. During the Anglo-Boer War of 1899-1902, all the Boer forces engaged in the then Orange Free State withdrew to Vereeniging and by 26 May 1900, the town had been evacuated and the railway bridge crossing the Vaal River had been blown up by the Boer forces to hinder the movement of the British forces. The British crossed the Vaal River at Viljoensdrift which is situated just west of the power station. Representatives of the Boers met at Vereeniging on 15 May 1902 to elect a commission to discuss peace terms with the British and on 31 May 1902, the terms were accepted and the treaty is known as the Treaty of Vereeniging (Jones and Jones 1999:233).

On 21 March 1960, the Sharpville massacre took place. Sharpville is a township situated in Vereeniging and was established in 1942 and named after the then mayor of Vereeniging, John Sharpe (Reader's Digest 1992:398). The Pan Africanist Congress called for a work stoppage in the Vereeniging area to protest against the pass system that forced Black South Africans to carry passes with them wherever they went. The police opened fire on the crowd near the police station and 69 people died in the ensuing gun fire (Reader's Digest 1992:403). Sharpville is still commemorated today with 21 March declared a public holiday which is called Human Rights Day.

During the anti-apartheid protests of the 1980s, the Vaal Triangle was a hive of activity and unrest. Due to this, on 23 October 1984, 7 000 army troops moved into Sebokeng township near Vereeniging where they undertook door-to-door searches looking for instigators of the unrest before moving on to Sharpville and Boipatong. At the same time some 800 000 workers at key parastal industries such as Iscor in Vereeniging stayed away from work as part of the unrest (Reader’s Digest: 476-477). This unrest continued until 1994.

The construction of the power station started in 1980 and the first set of six generating units went into commercial operation in December 1985. During site clearing, 350 hectares of Blue gum plantation had to be removed with 190,000 trees cleared over a period of five months. The removal of the Blue Gum trees saw a significant increase in the underground water table hence a piling foundation system for all the major structures was required (Lethabo Power Station 2015: Online). This indicates that the site is heavily impacted by previous and current activities and the possibility of finding intact significant heritage resources is highly unlikely.

The SAHRA fossil sensitivity map indicates that the site is situated in an area of very fossil high sensitivity.
Due to the proposed size of the CTWP, it triggers section 38 (1) of the NHRA which states that any person who intends to undertake a development categorised as—

(c) any development or other activity which will change the character of a site;

(i) **exceeding 5 000m² in extent**

must notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

It is highly unlikely that intact and significant heritage resources, including fossils, will be present due to the highly degraded nature of the project area with existing cooling towers, conveyer belts and previous excavations that took place in the area.
8.6 Water resources

The study area falls within Water Management Area 8 (Upper Vaal) in quaternary catchment C21G. The proposed sites for the CWTP are situated over 1km from the Vaal River. No obvious drainage lines or wetlands could be found within 500 m of the potential sites.

As the current volume of water abstracted from the Vaal River will not increase, there is no impact by the proposed project on this water resource.

It was stated that once the gum trees had been removed to make way for the power station, there was a significant increase in the underground water table hence a piling foundation system for all the major structures was required (Lethabo Power Station 2015: Online).

The geotechnical report by BKS compiled in 2012 stated that in terms of groundwater no seepage was evident in any of the test pits even though the investigation was carried out in January which is within the wet season. However, it was recommended that normal site precautions should be taken to ensure that water does not pond across the site or stand at the base of excavations. The report also stated that a water table is often encountered at the top of the rock level but in the case of the preferred site, the rock was well jointed and blocky in appearance therefore it was likely that the water table is situated at depth.

8.7 Social

This section provides contextual information regarding the socio-economic environment and profile of the region in which the proposed project will take place.

The Lethabo power station is situated within the Metsimaholo LM that falls in the Fezile Dabi DM. The information provided below comes from the 2014/2015 Integrated Development Plans (IDPs) of the LM and DM.

The Metsimaholo LM came into existence after the elections that took place in December 2000. It is a Category B municipality and is situated in the northern part of the Fezile Dabi DM Region. The former Sasolburg, Deneysville and Oranjeville Transitional Local Councils and a section of the Vaal Dam Transitional Rural Council are included in the Metsimaholo Region. The largest urban unit is Sasolburg followed by Deneysville and Oranjeville. Population distribution in the municipality is heavily urbanized (91% urban and 9% rural). This tendency
is directly related to the strong industrial and manufacturing character of the region with the majority of the rural population active within the agricultural sector.

The Vaal River and Vaal Dam form the northern boundary of the area, which also serve as the boundary between the Free State and Gauteng Provinces. A significant portion of the Metsimaholo region is included in the Vaal River Complex Regional Structure Plan, 1996. This plan is a statutory land use control document, which is applicable to other land located along important water resources such as the Vaal Dam, Vaal River and Barrage.

The official statistics according to Statistics South Africa’s Census 2001, Community Survey 2007 and Census 2011 were used to provide an overview of the municipality’s demographic and socio-economic profile. The population of the LM showed an increase of 28.6% (33 154) from 2001 to 2011 whilst the number of households increased by 41.8% (13 495) over the same period.

The annual personal income levels (Census 2011) reveals that 43% of the residents of the LM do not have any income with another 17.7% having an income of less than R 5 000 per month indicating that just over 60% of the population have little or no income. The unemployment rate is 32.1% hence the need for creation of work opportunities is crucial for the LM that has as one of its strategic priorities, the building of the local economy to create more employment, decent work and sustainable livelihoods.

The proposed construction of the CWTP will require the services of skilled people; however, the initial construction phase should be used as an opportunity to create work even if it is short-term for local people such as the clearing of the footprint of the CWTP, excavations, trenching for pipelines, etc.

Access by households to potable piped water inside the dwelling and yard increased from 81.0% in 2001 to 93.8% in 2011, whilst piped water outside the yard decreased from 17.8% to 5.3% over the same period. 2011 Census information showed that more households used electricity for heating, lighting and cooking compared to the status quo in 2001. 67.7% of households used electricity for heating, 86.4% for lighting and 83.1% for cooking in 2011. The uninterrupted supply of electricity therefore remains an important service delivery by the LM.

The Fezile Dabi DM contributes 31.4% to the Free State GGP, contributing 34.7%, followed. Motheo and Fezile Dabi districts’ contributions have increased from 32.3% and 25.2% in 1996 to 34.7% and 31.4% in 2007 respectively. Fezile Dabi DM is expected to be the highest
growing district in the Free State province, averaging 3.8% between 2008 and 2012, followed
closely by Motheo (3.3%) and Thabo Mofutsanyane (3.0%). Fezile Dabi and Motheo districts
are the drivers of the Free State economy, together contributing 66.1% to the provincial GGP
in 2007, while they are expected to grow by 3.6% on average from 2008 to 2012, which is
above the provincial average of 3.1% forecast for the same period.
9. POTENTIAL IMPACTS OF LETHABO EAST CWTP

This chapter presents the potential impacts identified for the proposed CWTP and recommends specialist studies that need to be undertaken in the EIA phase. The phases associated with the proposed CWTP are the construction phase; operational phase and decommissioning of the plant, each of which may result in impacts on the environment.

9.1 Construction phase

Activities expected to occur during this phase are:

- Disturbed land/Topsoil stripping
- Access roads and tracks
- All waste generated on the site will fit into the current waste management procedure at Lethabo Power Station. Bulk earthworks
- Concrete batch plant
- Building and plant construction
- Installation of temporary and permanent services (water, sewage, power)
- Laying of pipes
- Stormwater drainage and effluent management
- Storage of hazardous goods

Potential impacts during this phase include the potential for erosion; generation of dust and noise; spillage of fuel and concrete; littering, etc.

9.2 Operational phase

Activities expected to occur during this phase are:

- Regular maintenance of CWTP
- Supply of lime and other chemicals for treatment of water
- Ongoing removal of alien species on disturbed areas

9.3 Decommissioning phase

Activities resulting from this phase are:

- Removal of all structures and waste
- Rehabilitation of footprint of CWTP
Potential impacts for the decommission phase are similar to the construction phase and include the potential of invasive species occupying the disturbed footprint of the CWTP; dust; noise and litter, etc.

Table 4: List of environmental issues and potential impacts: construction phase

<table>
<thead>
<tr>
<th>Environmental Issues</th>
<th>Potential Impacts</th>
<th>Recommendations</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biodiversity:</strong> Construction</td>
<td>Clearance of land cover / vegetation</td>
<td>Dust and noise</td>
<td>Desktop flora and fauna assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loss of topsoil</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erosion of cleared area</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spread of invasive species</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Impacts on fauna including avifauna</td>
<td>Construction vehicles colliding with animals and birds</td>
<td>Existing disturbance – desktop flora and fauna assessment recommended</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loss of local species</td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity:</strong> Operational phase</td>
<td>Lack of rehabilitation of disturbed areas</td>
<td>Spread of invasive species in disturbed areas</td>
<td>Desktop flora and fauna assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erosion</td>
<td></td>
</tr>
<tr>
<td><strong>Biodiversity:</strong> Decommissioning</td>
<td>Footprint of CWTP not rehabilitated</td>
<td>Spread of invasive species in disturbed areas</td>
<td>Desktop flora and fauna assessment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Erosion</td>
<td></td>
</tr>
<tr>
<td><strong>Geotechnical Pre-construction</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Issues</td>
<td>Potential Impacts</td>
<td>Recommendations</td>
<td>Reasons</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------------</td>
<td>-----------------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| Site conditions      | • Instability of foundations due to heaving soils  
                        • Risk of cracks developing in CWTP due to heaving soils  
                        • Previous excavations undertaken could compromise safety of site  
                        • Flooding of area due to high water table | Geotechnical assessment of site alternatives 1, 2 & 3 | Assessment of preferred site raised a number of issues |
| Safety concerns      |                   |                 |         |
| Water resources: Construction | | | |
| Contamination of groundwater | • Contamination through poor management of waste including spillage of oil, fuel, cement, etc. | Hydrological assessment of all sites | High water table could be polluted |
| Water resources: Operational phase | | | |
| Contamination of groundwater | • Poor management of waste generated by CWTP  
                        • Spillage of waste when transferred to ash disposal facility | Desktop flora and fauna assessment | |
<p>| Heritage: Construction | | | |
| Destruction of heritage resources | • Damage or destruction of heritage sites including archaeological | Desktop heritage impact assessment | Highly disturbed nature of project with current and previous activities would have resulted in the |
| Damage of heritage resources | | | |</p>
<table>
<thead>
<tr>
<th>Environmental Issues</th>
<th>Potential Impacts</th>
<th>Recommendations</th>
<th>Reasons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socio-economic:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>sites, fossils,</td>
<td>- Desktop socio-economic study</td>
<td>Probable that construction of CWTP will benefit area</td>
</tr>
<tr>
<td>Job creation</td>
<td>graves, etc.</td>
<td>- Employment of local people to undertake unskilled or semi-skilled work</td>
<td></td>
</tr>
<tr>
<td>Health &amp; safety</td>
<td></td>
<td>- Construction workers may interact with surrounding communities that could result in increased levels of crime, spread of HIVAids, etc,</td>
<td></td>
</tr>
<tr>
<td>Increased economic</td>
<td></td>
<td>- Construction workers will need to be housed and fed; workers will make purchases from local businesses, etc</td>
<td></td>
</tr>
<tr>
<td>activity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
<td>- Potential negative visual impact of CWTP</td>
<td>CWTP will hardly be visible; dwarfed by 164m high cooling water towers</td>
</tr>
<tr>
<td>Change in outlook</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of neighbouring</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>receptors</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10 PLAN OF STUDY FOR EIA

The Plan of Study (PoS) describes how the EIA phase will proceed and includes details of the specialist studies required to be undertaken during the EIA phase. The PoS will meet the requirements of the NEMA EIA Regulations of December 2014.

The purpose of the EIA is to:
- Address issues that have been raised during the Scoping Phase;
- Assess alternatives to the proposed activity in a comparative manner;
- Assess all identified impacts and determine the significance for each impact; and
- Formulate mitigation measures.

The EIA Phase will consist of the following activities:
- Public participation including stakeholder engagement;
- Specialist studies
- Identification potential impacts and mitigation measures
- Impact Assessment;
- Assessment of alternatives;
- Reporting and decision making.

The EIA report will address environmental impacts and benefits as well as cumulative impacts associated the construction, operation and decommissioning of the CWTP in order to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed project. All feasible alternatives (including the ‘no go’ alternative) will be assessed.

10.1 Authority consultation

Consultation with the regulating authority (i.e. DEA) has been undertaken and will continue throughout the EIA phase of the project. On-going consultation and input from DEA will include the following:
- Submission of a Final Scoping Report following a 30-day public review period of this draft scoping report (and consideration of comments received);
- Submission of a Final EIA Report following a 30-day public review period of the draft EIA Report.
• A consultation meeting and site visit (if necessary) with DEA in order to discuss the findings and conclusions of the EIA Report.

Should there be substantive changes between any draft reports and final reports, the final reports will be made available for public review for an additional 14 days prior to the submission to DEA.

10.2 Public participation

10.2.1 Introduction

The purpose of public participation during the Impact Assessment Phase is to present the findings of the EIA phase and to avail the Draft EIAR to the public for comment. A thirty days (30) comment/review period will be allowed. Once the review is completed, the DEAIR will be submitted to DEA for a decision. The Authority may decide to request additional information on matters that may not be clear from the report; authorise the application with certain conditions to be compiled with by the applicant or reject the report. A decision of the Authority reflecting the outcome of the application will be issued to the applicant.

10.2.2 Methodology

Registered I&APs will be advised in good time of the availability of Draft EIR Reports, how to obtain them, and the dates and venues of focus group meetings and where the contents of the Reports will be placed for comment. The public participation process for the EIR Phase will involve the following proposed steps:

10.2.3 Announcement of the availability and public review of the Draft EIR

A letter will be circulated to all registered I&APs, informing them in terms of progress made with the study and that the Draft EIAR and EMPr are available for comment. The Report will be distributed to public places (Vereeniging library and Evaton Public Library) and also presented at focus group meeting/s. Advertisements will be placed in the same newspapers (Sasolburg Ster Newspaper, the Vereeniging Ster Newspaper and the Citizen Newspaper) used in the Scoping phase to announce the public review period of the Draft EIAR.

10.2.4 Public review of Draft EIAR and EMPr

The EIA Guidelines specify that registered stakeholders must have the opportunity to verify that their issues have been captured and assessed before the EIAR Report will be approved.
The findings of the specialist assessment will be integrated into the Draft EIR. It will further include the Comments and Responses Report, which will list every issue raised by I&APs and the responses by the EAP. The findings of the assessment and recommended mitigation measures will also be incorporated into the EIR.

As part of the process to review the Draft EIAR and EMP, the focus group meeting will be arranged to afford registered stakeholders the opportunity to obtain first-hand information from the project team members and also to discuss their issues and concerns. Contributions at this meeting will be considered in the Final EIAR.

10.2.5 Progress feedback

Once comments from I&APs have been incorporated, all registered stakeholders on the database will receive a letter to report on the status of the process, to thank those who commented to date and to inform them that the Final EIAR and EMP have been submitted to the authority for consideration.

10.2.6 Submission of Final EIR and Decision making

The final EIAR and EMP will be submitted to the Authority including specialist's studies. I&APs will be given an opportunity to comment on Final EIAR.

10.2.7 Announce Authority Decision

Registered I&APs will be notified of the decision from the authorities. The environmental authorisation (EA) will be advertised in The Citizen Newspaper, Sasolburg Ster Newspaper and the Vereeniging Ster Newspaper. The details for appeals will also be included in the advertisement.

10.3 Assessment of alternatives

The site alternatives to be considered for the location of the CWTP are described in Chapter 3 of this report. However, a brief summary below is provided:

- **Alternative site 1**: this site is situated on the northern side of cooling tower 4.
- **Alternative site 2**: this site is situated between cooling towers 4 and 5 and immediately north of alternative site 1.
- **Alternative site 3**: this site is situated immediately north of cooling tower 5.
- **Alternative site 4**: the site that is situated immediately west of cooling tower 4.
- **‘No go’ alternative**: this option will also be investigated to determine what will occur if the CWTP is not built.
### 10.4 Summary of specialist studies

A summary of the identified specialist studies to be undertaken in the EIA phase of the project is tabulated below:

Table 5: Summary of specialist studies

<table>
<thead>
<tr>
<th>Specialist Study</th>
<th>Activities to be undertaken</th>
<th>Specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrological study</td>
<td>✐ Describe and assess groundwater resources within the study area.</td>
<td>IWR Water Resources (Stephen Mallory)</td>
</tr>
<tr>
<td></td>
<td>✐ Identify any ‘no-go’ areas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Identify potential impacts of CWTP</td>
<td></td>
</tr>
<tr>
<td>Geology and soils assessment</td>
<td>✐ Assess expected bedrock geology and soil cover within the study area based on available data</td>
<td>To be announced</td>
</tr>
<tr>
<td></td>
<td>✐ Findings on foundation stability, presence of active soils, etc.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Information on excavation potential</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Provide mitigation measures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Assess site alternatives and recommend preferred site alternative</td>
<td></td>
</tr>
<tr>
<td>Desktop biodiversity study</td>
<td>✐ Describe the fauna and flora in the study area.</td>
<td>Plantago Lanceolata Pty Ltd (Divhani Mulaudzi)</td>
</tr>
<tr>
<td></td>
<td>✐ Describe the habitat integrity.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Identify the presence of or likelihood of occurrence of Red Data species.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Provide an ecological sensitivity map</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Assess site alternatives and recommend preferred site</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Provide mitigation measures</td>
<td></td>
</tr>
<tr>
<td>Desktop Heritage Impact Assessment</td>
<td>✐ Determine if there are any heritage resources of significance on the project area</td>
<td>Vungandze Projects (Khosi Mngomezulu)</td>
</tr>
<tr>
<td></td>
<td>✐ Map any heritage resources found</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Provide mitigation measures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Submit HIA to relevant authority</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✐ Assess sites alternatives and recommend preferred site</td>
<td></td>
</tr>
</tbody>
</table>
### Specialist Study

<table>
<thead>
<tr>
<th>Specialist Study</th>
<th>Activities to be undertaken</th>
<th>Specialist</th>
</tr>
</thead>
</table>
| Desktop Socio-economic Impact Assessment      | - Describe socio-economic environment of study area highlighting those attributes and components which may influence or be influenced by the proposed CWTP  
- Identify and discuss the opportunities provided by the proposed project  
- Identify and discuss negative impacts (if any) including health and safety risks  
- Provide mitigation measures where feasible  
- Assess site alternatives and recommend preferred site | Master Q (Anita Bron)               |

#### 10.5 Assessment of impacts

During the EIA phase, the significance of impacts identified will be assessed according to the methodology described below. Where possible, mitigation measures will be provided to manage impacts.

**Extent of the impact**: the extent of the impact will be assessed according to the following parameters:

1. Limited to the site and its immediate surroundings.
2. Local/Municipal extending only as far as the local community or urban area.
3. Provincial/Regional.
4. National i.e. South Africa.
5. Across International borders.

**Duration of the impact**: the lifespan of the impact will be assessed in terms of the duration of the impact, i.e.:

1. Immediate (less than 1 year).
2. Short term (1-5 years).
3. Medium term (6-15 years).
4. Long term (the impact will cease after the operational life span of the project).
5. Permanent (no mitigation measures or natural process will reduce impact after construction).
**Magnitude of the impact**: the magnitude or severity of the impacts will be indicated as either:

(0) None (where the aspect will have no impact on the environment).
(1) Minor (where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected).
(2) Low (where the impact affects the environment in such a way that natural, cultural and social functions and processes are slightly affected).
(3) Moderate (where the affected environment is altered but natural, cultural and social functions and processes continue albeit in a modified way).
(4) High (where natural, cultural or social functions or processes are altered to the extent that it will temporarily cease)
(5) Very high / don't know (where natural, cultural or social functions or processes are altered to the extent that it will permanently cease).

**Probability of occurrence**: the likelihood of the impact actually occurring will be indicated as either:

(0) None (impact will not occur).
(1) Improbable (the possibility of the impact materializing is very low as a result of design, historic experience or implementation of adequate mitigation measures).
(2) Low probability (there is a possibility that the impact will occur).
(3) Medium probability (the impact may occur).
(4) High probability (it is most likely that the impact will occur).
(5) Definite / do not know (the impact will occur regardless of the implementation of any prevention or corrective actions or it the specialist does not know what the probability will be based on too little published information).

**Status of the impact**: the impacts will be assessed as either having a:

- Negative effect (i.e. at a cost to the environment).
- Positive effect (i.e. at a benefit to the environment).
- Neutral effect on the environment.

**Reversibility**
The degree to which the impact can be reversed.

**Cumulative impact**: the impact of the development is considered together with additional developments of the same or similar nature and magnitude. The combined impacts may be:

- Negligible – i.e. the net effect is the same as the single development
• Marginal – i.e. the impact of two developments of a similar nature is less than twice the impact of a single development. This implies it is better to place the two developments in the same environment rather than in separate environments.

• Compounding – the impact of two developments is more than twice the impact of two single developments therefore it is better to split the two developments into separate environments.

**Significance of the impact:**
Based on a synthesis of the information contained in the points above, the potential impacts will be assigned a significance weighting (S). The weighting is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the impact hence S=(E+D+M)*P.

Table 6: Significance score and description

<table>
<thead>
<tr>
<th>Average Score</th>
<th>Significance</th>
<th>Significance Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Negligible</td>
<td>0</td>
<td>There is no impact</td>
</tr>
<tr>
<td>1</td>
<td>Low</td>
<td>1-15</td>
<td>Impact is of a low order, mitigation measures are easy and simple or not required</td>
</tr>
<tr>
<td>2</td>
<td>Low-Medium</td>
<td>16-30</td>
<td>Impact is higher but with limited effect, mitigation measures are feasible and easily achieved</td>
</tr>
<tr>
<td>3</td>
<td>Medium</td>
<td>31-45</td>
<td>Impact is real but not substantial and mitigation is both feasible and fairly easily possible</td>
</tr>
<tr>
<td>4</td>
<td>Medium-High</td>
<td>46-60</td>
<td>Impact is substantial and mitigation measures are difficult, expensive and time consuming</td>
</tr>
<tr>
<td>5</td>
<td>High/Fatal Flaw</td>
<td>&gt;60</td>
<td>Impact is of the highest order and there are few, if any, mitigation measures to offset impact</td>
</tr>
</tbody>
</table>

**10.6 Environmental Impact Assessment Report**

The EIA report will contain all the information as set out in Appendix 3 of GNR 982 of the 2014 EIA Regulations and will also be undertaken in accordance with the approved Plan of Study.
10.7 Environmental Management Programme

With the results of specialist studies and recommendations and input from I&APs and stakeholders, an EMPr will be prepared for the management and mitigation of potential impacts during the construction, operation and decommissioning of the CWTP.

The Environmental Management Programme (EMPr) will be undertaken in accordance with Appendix 4 of the EIA Regulations in terms of GNR 982 as well as complying with section 24N of NEMA.

10.8 Timeframes for EIA process

The table below presents the proposed timeframes for the EIA process, which takes cognisance of authority review timeframes. Note that these dates are subject to change.

Table 7: Timeframes for EIA process

<table>
<thead>
<tr>
<th>Scoping phase</th>
<th>Activities</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close of commenting period for the public</td>
<td>19 January 2016</td>
<td></td>
</tr>
<tr>
<td>Comment on the submitted application, DSR and Plan of Study by the Competent Authority</td>
<td>27 November - 11 February 2016 (44 days)</td>
<td></td>
</tr>
<tr>
<td>Update and finalise DSR into FSR and submit for decision</td>
<td>12 February - 22 April 2016 (43 days)</td>
<td></td>
</tr>
<tr>
<td>Specialist studies</td>
<td>25 April - 6 May 2016</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EIR Phase</th>
<th>Activities</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of DEIR</td>
<td>6 May - 20 May 2016</td>
<td></td>
</tr>
<tr>
<td>Public review of DEIAR and EMPr (advert on availability on 8th of June 2016)</td>
<td>30 May 2016 – 12 July (30 days)</td>
<td></td>
</tr>
<tr>
<td>Update and finalise DEIAR and EMPr</td>
<td>13 July – 15 July 2016</td>
<td></td>
</tr>
<tr>
<td>Submit FEIAR and EMPr to DEA</td>
<td>20 July 2016</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Authorisation Phase</th>
<th>Activities</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEA review period and decision-making</td>
<td>15 December 2016 (107 days)</td>
<td></td>
</tr>
</tbody>
</table>
11 ASSUMPTIONS, LIMITATIONS AND GAPS IN KNOWLEDGE

The following assumptions, limitations and gaps in knowledge accompany the scoping exercise for the proposed project:

- It is accepted that the project motivation and description, as obtained from the applicant, is accurate.
- It is assumed that the baseline information from previous reports e.g. Geotech Report scrutinised and used to explain the environmental profile is accurate.

12 CONCLUSION

The scoping process has provided a better understanding of the study area and the nature and extent of the proposed CWTP on the project area as well as identifying potential issues and defining the scope of the studies required within the EIA phase of the project.

A number of potential environmental impacts have been highlighted for further investigation in the next phase of the EIA so that their significance can be established as well as identifying mitigation measures for the management and minimization of these impacts.

Through a public consultation process, every effort has being made to include representatives of all stakeholder groupings in the study area. Recommendations regarding investigations required to be undertaken in the EIA phase are provided within the PoS for EIA contained within Chapter 10 of this report.

Following the comment period for the DSR, issues raised by I&APs and the regulatory authorities will be captured in the FSR that will be submitted to the competent authority for consideration and acceptance. Once the FSR has been accepted by the DEA, the EIA phase will commence.
REFERENCES


Savannah Environmental Pty Ltd. 2015. Final scoping report. Proposed Lethabo PV solar energy facility near Sasolburg, Free State Province. (Unpublished paper.) Johannesburg