

Heineken PV facility

Reference: GPEMF/19-20/0054

Operational Environmental Management Audit Report



Well vegetated (winter) solar PV field at Heineken.

Prepared by: Barbara Raubenheimer
June 2026

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Operational Environmental Management Audit Report – June 2026

1. Introduction

Amathemba Environmental Management Consulting was appointed by SOLA Group (Pty) Ltd to undertake an operational audit in terms of the Gauteng Provincial Environmental Management Framework 2015 under which the Heineken Sedibeng Brewery PV facility is registered. This audit report is based on a site inspection undertaken on 12th of June 2026.

1.1. Scope, Purpose and Objectives of the Audit

The main objective of the compliance audit was to respond to the need for external compliance auditing. There is no EA or EMPr specification for quarterly operational phase ECO monitoring. The proposed development must comply with the following approved authorisations and a generic Environmental Management Programme (EMPr) that was utilised evaluate the operation of the PV facility based on environmental best practice principles:

Document Title	Reference Number	Date of Issue
Registration of the Heineken Sedibeng Brewery Solink Solar Photovoltaic(PV) Facility on Erf 244 in Graceview Extension 3 and Erf 243 in Graceview Extension 1, Midvaal Local Municipality to Comply with the Gauteng Provincial Environmental Management Framework Standard 2018 with respect to Activity Number 11,14,27 and 28 of Listing Notice 1 of the Regulations 2014 as Amended that ore excluded from the requirements to obtain and Environmental Authorisation in terms of Section 24(2)(D) of the National Environmental Management Act,1998 (Act no 107 of 1998) (NEMA), To be undertaken in Environmental Management Zone 5 as Identified in the Gauteng Provincial Environmental Management Framework 2015.	Reference: GPEMF/19-20/0054	31 January 2020
Gauteng Environmental Management Framework and Exclusion of associated activities from the requirement to Obtain and Environmental Authorisation in terms of Section 24(2)(d) and 24(10)(a) of NEMA	GNR 164 of 2018	2 March 2018

1.2. Audit Methodology

The following methodology was employed for this external compliance audit:

1.2.1. Pre Audit Tasks

Review of the various approvals / documents relevant to the development, namely:

- Registration document issued by the Gauteng Department of Agriculture and Rural Development (GDARD).
- Spatial data where applicable.
- Previous ECO audit reports where available.
- National Screening Tool (DFFE)

1.2.2. On-Site Audit

A site visit was undertaken on the 12th of June 2026 by Barbara Raubenheimer. The site inspection served to give the auditor insight into on site implementation and operation of the PV facility relating to generalised environmental best practice principles.

1.2.3. Reporting

Compilation of the audit report is based on the information obtained during the audit inspection and subsequent follow-up liaison with the representatives of the holder of the Permit. An electronic copy of this report is issued to the Holder of the Permit.

1.3. Assumptions, Limitations and Gaps in Knowledge

- The assumption is made that all information received on which this audit report is based, is accurate and correct. Parties that contributed information to inform this audit were the Holder and employees as representatives of the Holder.
- No public consultation was undertaken as part of this audit.
- The auditor had access to all the information necessary to compile this audit report. There are no gaps in knowledge that would suggest any level of uncertainty in the findings of the auditor.

2. Expertise of the Auditor

2.1. Barbara Raubenheimer (Auditor and Author of Audit Report)

Barbara completed an Honours Degree (B.Sc. Hons.) in Environmental Science, a M.Sc. *et* Art in Urban and Regional Planning and a Post Graduate Certificate in Education (Geography and Economy) from the North-West University of Potchefstroom. Barbara has over ten (10) years' experience in the environmental sector. She is a registered Environmental Assessment Practitioner (EAP) with EAPASA and has been involved in various Environmental Impact Assessments (drafting of EIAs, Basic Assessments and EMPs) and Environmental Control Officer (ECO) work.

2.2. Barry Wiesner (Reviewer of Audit Report)

Barry completed a Master's in Philosophy (MPHIL) in Environmental Management at the University of Cape Town. Barry also has a BA majoring in Archaeology and Environmental and Geographical Science and has a Higher Diploma in Education (HDE) from the University of Cape Town. He also has a Bachelor of Theology from the University of South Africa. Barry is a Green Star SA Accredited Professional and a member of the International Association of Impact Assessors. Barry has extensive site experience working as an Environmental Control Officer (ECO) at major construction sites and in conducting Environmental Audits, EIAs, BARs and the compilation of numerous Environmental Management Programs (EMPs) over the last 24 years.

2.3. Statement of Independence

Amathemba Environmental Management Consulting CC was appointed to carry out the external compliance audit and compile this resultant Audit Report. Neither Barry Wiesner, nor Barbara Raubenheimer in their private capacity, nor Amathemba Environmental Management Consulting CC have any material present or contingent interest in the outcome of this report, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence. Amathemba Environmental Management Consulting CC has no beneficial interest in the outcome of this compliance audit, other than reasonable remuneration for work performed in undertaking the audit inspection and compiling this report.

3. Requirements of Appendix 7 of EIA Regulations (2014, as amended)

Although not legally required, this audit report has been compiled in accordance with the requirements of Appendix 7 of the 2014 EIA Regulations, as amended. These requirements are included herewith, which contains the minimum content requirements for compliance audit reports.

Regulatory Ref # of Appendix 7	Details of Requirement	Report Section Reference
1	The environmental audit report must provide for recommendations regarding the need to amend the EMPr, and where applicable, the closure plan.	N/A - No amendments required at this time.
2 (a) (i)	Report on level of compliance with the conditions of the environmental authorisation and the EMPr, and where applicable, the closure plan.	Sections 5 and 6
2 (a) (ii)	Report on the extent to which the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan achieves the objectives and outcomes of the EMPr, and closure plan.	Section 5 and 6
2 (b)	Identify and assess any new impacts and risks as a result of undertaking the activity.	N/A - No new impacts identified additional to what has already been identified during the EIA.
2 (c)	Evaluate the effectiveness of the EMPr, and where applicable, the closure plan.	N/A - EMPr effective to manage impacts identified during EIA.
2 (d)	Identify shortcomings in the EMPr, and where applicable, the closure plan.	N/A - No shortcomings identified during this audit period.
2 (e)	Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr, and where applicable, the closure plan.	Section 5 and 6
3 (1) a	An environmental audit report prepared in terms of these Regulations must contain details of the— (i) independent person who prepared the environmental audit report; and (ii) expertise of the independent person that compiled the environmental audit report	Section 2
3 (1) b	a declaration that the independent auditor is independent in a form as may be specified by the competent authority;	Section 3
3 (1) c	an indication of the scope of, and the purpose for which, the environmental audit report was prepared;	Section 1.1
3 (1) d	a description of the methodology adopted in preparing the environmental audit report;	Section 1.2
3 (1) e	an indication of the ability of the EMPr, and where applicable, the closure plan to— (i) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis. (ii) sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and (iii) ensure compliance with the provisions of environmental authorisation, EMPr, and where applicable, the closure plan;	Section 5 and 6
3 (1) f	a description of any assumptions made, and any uncertainties or gaps in knowledge;	Section 1.3
3 (1) g	a description of any public consultation process that was undertaken during the course of carrying out the environmental audit report;	Section 1.3
3 (1) h	a summary and copies of any comments that were received during any public consultation process; and	N/A
3 (1) i	any other information requested by the competent authority.	No additional requirements are known currently.

4. Document Review

As part of the requirements in the EMPr the following documents need to be maintained during the Operational Phase:

Requirement*	✓/X/NA	Comment
Environmental Management System	✓	An ESMS is in place.
Internal Environmental Audits	NA	As there is no EA, there is no requirement of internal audit reports.
Avifaunal Monitoring Reports	NA	This is not a requirement for the Heineken PV.

Water Use Register	✓	Water usage records are being kept.
Incidents and Complaints Registers	✓	Incidents and complaints are recorded as and when they occur (none recorded yet).
Waste Records	X	Waste records are available, but no final disposal proof is available.
Local Employment	✓	Locals are appointed to the site for the management of vegetation and panel washing.
Emergency Preparedness	✓	Emergency preparedness plans are in place.

*Regular revision of all supporting plans is necessary to ensure they remain current and correct.

5. Results of Compliance Monitoring

It should be noted that as indicated in the introduction of this report, that this PV facility is not legally obliged to be in possession of a formal environmental management system. Subsequently, a number of environmental best practice outcomes were considered. The following outcomes were considered:

- **Objective 1:** Establish clear reporting, communication, and responsibilities in relation to overall implementation of the EMPr during operation.
- **Objective 2:** Protection of indigenous natural vegetation, fauna and maintenance of rehabilitation.
- **Objective 3:** Protection of avifauna from collision and electrocution.
- **Objective 4:** Minimise soil degradation, erosion and alien plant invasion.
- **Objective 5:** Minimise dust and air emissions.
- **Objective 6:** Ensure the implementation of an appropriate fire management plan and general management measures during the operation phase.
- **Objective 7:** Minimise the potential impact on farming activities and on the surrounding landowners.
- **Objective 8:** Appropriate handling and management of hazardous substances, waste and dangerous goods.
- **Objective 9:** Enhancement of positive social impacts and mitigation of negative social impacts.

5.1. Areas of Concern

Following the site visit that was conducted on the 12th of June 2026 the following areas of concerns were observed.

- Some alien invasive plants are present between the solar panels as well as the open undeveloped areas.
- Building rubble from construction phase remains on site in the open space areas.
- Occurrences of litter were seen on site, likely windblown or from security personnel.
- Fuel spills are widely visible from a vehicle that has been travelling on site for maintenance or security purposes.
- Panel washer's generator did not have a drip tray underneath during the time of the audit.
- The waste management service provider is not able to provide all the required waste documentation (i.e. waste transporter license, safe disposal certificates, license of landfill site utilised).
- Remnant solar panels not adequately removed off site for recycling.
- Emergency numbers were not visibly displayed on site.
- A digital platform is available for the keeping of records or incidents of all kinds, but to date no incidents have been recorded i.e. an inverter that caught fire.

The following table gives some photographic evidence of the abovementioned areas of concern, with the following key utilised to give a timeframe in which the concerns are to be addressed:

Colour	Timeframe
	Ongoing- through operational lifespan.
	Medium term- Prior to next bi-annual audit.
	Short term- Immediate

Table 1 Areas of Concern Illustrated

Image	Example and Action	Timeframe to Resolve
	Example of alien plant vegetation occurring on site between the solar panels, in open areas and other areas on site.	Ongoing- through operational lifespan.
	Example of building rubble occurring in the open space area adjacent to the solar field. All building rubble is to be removed carefully, not damaging the surrounding rehabilitated areas.	Medium term- Prior to next bi-annual audit.
	White residue (burn shield) from an inverter that caught fire recently (confirmed by an on-site technician). Incident should be recorded and resolved with the burn shield being cleaned.	Short term- Immediate
	Eroded soil that washed into the storm water drain from an internal road. The erosion mitigating measures limiting erosion from the roadways such as adequate shaping and compacting should be maintained. To prevent siltation of the storm water drain. A net can be placed over the grid.	Medium term- Prior to next bi-annual audit.
	Fuel spills occurring on site, internal roads and areas adjacent to the fence from a vehicle that has a leak, likely due to lacking maintenance. Vehicle maintenance is to be conducted regularly, with spills being cleared utilising the on-site spill kit and adequately disposing of the spill kit content. All hazardous chemicals on site should also be stored in a hazardous chemical store or an adequate secondary containment area i.e. impermeable surface not prone to run-off.	Short term- Immediate

Image	Example and Action	Timeframe to Resolve
	The generator utilised for the panel washing on the day of the audit, did not have an adequate drip tray. A sign from site or elsewhere with holes was placed below the generator. Machinery must always be operated with the use of a drip tray to limit and mitigate spills.	Short term- Immediate
	Remnant solar panels not adequately removed, stored or disposed of. Solar panel if damaged or unused should be stored adequately (covered) or disposed of at a licensed facility to handle that specific waste stream.	Medium term- Prior to next bi-annual audit.

5.2. Non-Compliances

Non-compliances were given for aspects viewed to be critically important to ensure effective operation of the PV facility and minimising environmental impacts. These non-compliances are, however not binding, but viewed to be environmental best practice.

The identified non-compliances relate to the following:

- There is no HCS cage on site for storage.
- There is no available proof that rehabilitation is monitored annually by a suitably qualified individual.
- There is no proof of maintenance concerning the removal of alien invasive plant species.
- No proof is available to substantiate that environmental training and awareness was done on site with operational staff.

5.3. Environmental Incidents and complaints

To date, no environmental incident has been recorded. It is however noted that a fire of an inverter was not recorded anywhere to the knowledge of the ECO. An incidents register platform is in place, a physical register for complaints and incidents may assist staff to document incidents and complaints.

5.4. Other Findings

5.4.1. Avifauna

It is noted that there is avifauna occurring on site i.e. Plovers (*Kiewiet*). Formal monitoring of avifaunal mortalities is not deemed to be necessary, but it is recommended that the maintenance staff checks the site for nests on the ground prior to the execution of maintenance activities such as grass cutting.

5.5. Resource Use

The resource use is being recorded currently by the environmental officer including water usage, fuel usage and waste being taken from site. The emissions generated are further also being documented by the environmental officer.

5.6. Compliance Summary

There are no noted non-compliances. The site is commended on their efforts to control invasive vegetation as no alien plants were noted during this audit period. Administrative items that require to be verified are indicated in the checklists below.

5.6.1. EMPr Compliance Score

Of the total 77 impact management actions audited, 64 are applicable. Of the applicable actions the resulting compliance scores are:

- Compliant - 53%
- Partially Compliant - 38%
- Non-Compliant - 9%

6. Recommendations

It is recommended that the aspects highlighted in the areas of concern be addressed. Furthermore establishing mechanisms for on-site staff to obtain training, document incidents and complaints will significantly improve the overall environmental management and record keeping.

7. Adequacy of the EMPr

Based on the information review and areas inspected at the time of the audit, there are some aspects concerning environmental management of impacts that require attention.

Auditor: Barbara Raubenheimer (0780709014)

Signed: 

Date: 02 July 2026

APPENDIX A: REGISTRATION OF HEINEKEN PV FACILITY WITH GDARD (2020)



GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Reference: GPEMF/19-20/0054
Enquiries: Xoliswa Bobelo
Tel: +27 (0)11 240 3391
Xoliswa.Bobelo@gauteng.gov.za

Sedibeng Solar PV Project (Pty) Ltd
1 Summit Close Constantia
Cape Town
7805

Email: oliver@solink.co.za

Dear Mr. Oliver Johnston,

REGISTRATION OF THE HEINEKEN SEDIBENG BREWERY SOLINK SOLAR PHOTOVOLTAIC (PV) FACILITY ON ERF 244 IN GRACEVIEW EXTENSION 3 AND ERF 243 IN GRACEVIEW EXTENSION 1, MIDVAAL LOCAL MUNICIPALITY TO COMPLY WITH THE GAUTENG PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK STANDARD 2018 WITH RESPECT TO ACTIVITY NUMBER 11, 14, 27 AND 28 OF LISTING NOTICE 1 OF EIA REGULATIONS 2014 AS AMENDED THAT ARE EXCLUDED FROM THE REQUIREMENTS TO OBTAIN AN ENVIRONMENTAL AUTHORISATION IN TERMS OF SECTION 24(2)(D) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998), TO BE UNDERTAKEN IN ENVIRONMENTAL MANAGEMENT ZONE 5 AS IDENTIFIED IN THE GAUTENG PROVINCIAL ENVIRONMENTAL MANAGEMENT FRAMEWORK, 2015

The request for registration for the abovementioned project, received on 13 December 2019 and acknowledged on 18 December 2019, refers.

With reference to the above request for registration please be advised that the Department is satisfied with the adequacy and accuracy of the information provided and hereby registers the following:

The development of the above-mentioned site for the development of Heineken Sedibeng brewery solink solar photovoltaic (pv) facility. The size of the property where these activities will take place is 138.24 hectares in extent while the proposed foot print size of the proposed activity is 19,9 hectares.

The development must take place on the location below:

Reference Number:	GPEMF/19-20/0054
Location of Activity:	ERF 244 in Graceview Extension 3 and Erf 243 in Graceview Extension 1
Activities:	Activity 11, 14, 27 and 28 of Listing Notice 1 of EIA Regulations 2014 as amended

Department of Agriculture and Rural Development, 56 Esf Street, Unetho House, Johannesburg, 2008, PO Box 6788
Johannesburg, 2008 Tel: (011) 240-2500. Website: www.gdard.gov.za

56 Esf Street, Unetho House, Johannesburg, 2008, PO Box 6788, Johannesburg
Tel: (011) 240-2500 Fax: (011) 240-2501
www.gauteng.gov.za Hotline: 0800 1 1000

Registration Number: GPEMF19-20/0054

Coordinates:	Latitude (S)		Longitude (E)
Coordinates of External corner points:		Latitude (S)	Longitude (E)
	Point 1	26° 25' 44.62"	28° 3' 41.79"
	Point 2:	26° 25' 54.41"	28° 3' 40.45"
	Point 3	26° 25' 56.03"	28° 3' 43.59"
	Point 4	26° 26' 0.72"	28° 4' 0.92"
	Point 5	26° 25' 49.45"	28° 4' 2.21"
	Point 6	26° 25' 48.57"	28° 3' 58.51"
	Point 7	26° 25' 38.32"	28° 4' 1.49"
	Point 8	26° 25' 48.57"	28° 3' 58.46"

You are required to comply with the Gauteng Provincial Environmental Management Framework Standard 2018 and Environmental Management Specifications.

A copy of this registration letter and the Gauteng Provincial Environmental Management Framework Standard 2018 must be kept on site and where the holder has a publicly accessible website, be placed on such website, and must be made available on request.

Registration lapses if commencement does not occur within 10 years of receipt of the registration number.

Compliance with the Standard does not negate the need for the proponent to comply with all other applicable legislation.

The holder of the Registration letter is required to notify in writing the adjacent landowners of this decision within 14 days of receipt of this letter and the provisions to appeal as stated below:

An appeal may be lodged by any member of the public against the issuing of this registration number in terms of section 43 of the National Environmental Management Act, 1998 and the National Appeal Regulations, 2014, which sets out the appeal procedures. The appeal should be lodged within 20 days, from the date of receipt of the Registration letter to the Appeals Administrator by any of the following means:

Postal Address:

The Appeals Administrator
Department of Agriculture and Rural Development
P.O. Box 8769
Johannesburg
2000

Physical Address

The Appeals Administrator
Department of Agriculture and Rural Development
56 Eloff Street, Umnotho House, 23rd Floor
Johannesburg
2000

Fax No: 011 240 3158/2700

Email Address: appeals@gauteng.gov.za

Your appeal must be submitted in the prescribed appeal form obtainable from the appeal administrator, Ms. Tsholofelo Mere, at telephone number 011 240 3204 or email address tsholofelo.mere@gauteng.gov.za. The appeal form is also available from our website: www.gdard.ppg.gov.za. Should you have any queries or require additional information regarding the appeal process, you can contact the appeal administrator on any of the mentioned contact details.

The proponent is required to notify the Director: Compliance Monitoring in writing, fourteen (14) days prior to the commencement of the development of Heineken Sedibeng brewery solink solar photovoltaic (pv) facility, on Er 244, Portion 0 in Graceview Ext. 3 and Erf 243, Portion 0 in Graceview Ext 1, Midvaal Local Municipality.

In the event of change of ownership of the registered development, the new owner must submit the relevant declaration and details contemplated in Appendix 5 of the GPEMF Standard 2018 (Declaration of change of ownership) within 30 days of finalisation of the change.

The reference number, namely GPEMF/19-20/0054 is now the registration number.

Kindly quote the registration number above in all future correspondence in respect of this registration.

Yours faithfully



MR. STEVEN MUKHOLA
DIRECTOR - IMPACT MANAGEMENT
DATE: 31/1/2020

APPENDIX B: ADDITIONAL PICTURES



Building rubble on site.



Infrastructure access point damaged.



Example of weeds growing on side



Dedicated labelled waste receptacles



Fuel spills where from leaking vehicle.



Fence and fire break adequately maintained.



Perforated plate/sign utilised as drip tray.



On site tranformer in adequately banded area.



Fire fighting equipment on site.



Safety signage, no smoking sign.



Internal road showing signs of erosion due to run-off.

APPENDIX C: EMPr CHECKLIST

Impact Management Actions	Compliance Results	
	✓/X/NA	Comments/ Findings/ Recommendations
Objective 1: Establish clear reporting, communication, and responsibilities in relation to overall implementation of the EMPr during operation.		
The Operations Manager will ensure that adequate resources (human, financial, technology) are made available and appropriately managed for the successful implementation of the operational EMPr.	✓	To date no concerns noted that require additional human, financial or technological intervention. Environmental aspects are managed appropriately.
The Operations Manager will conduct annual basis reviews of the EMPr to evaluate its effectiveness.	NA	There is no EMPr requirement. It
The Operations Manager will take appropriate action as a result of findings and recommendations in management reviews and audits.	NA	To the knowledge of the auditor, there has been no prior operational audit.
The Operations Manager will provide forums to communicate matters regarding environmental management.	✓	The HSE officer and site manager regularly correspond regarding all matters including environmental aspects.
The Technical/SHEQ Manager will develop and Implement an Environmental Management System (EMS) for the PV facility and associated infrastructure.	✓	It is uncertain whether there is a formal EMS for the PV plant, but there are a large volume of documents including an environmental management plan.
The Technical/SHEQ Manager will manage and report on the facility's environmental performance.	✓/X	Environmental performance is being monitored in terms of recordkeeping regarding resource use i.e. water register, fuel usage, waste removal.
The Technical/SHEQ Manager will maintain a register of all known environmental impacts and manage the monitoring thereof.	NA	A platform for the register is available, but environmental impacts have not been recorded to the present.
The Technical/SHEQ Manager will conduct internal environmental audits and co-ordinate external environmental audits.	✓/X	Monthly summary reports are compiled, but no formal record of internal audit reports is available currently.
The Technical/SHEQ Manager will liaise with statutory bodies such as the National and Provincial Department of Forestry, Fisheries and the Environment (DFFE) on environmental performance and other issues.	NA	There is no binding EA, therefor departmental liaising has not taken place.
The Technical/SHEQ Manager will conduct environmental training and awareness for the employees who operate and maintain the PV facility.	X	No training has been conducted yet.
The Technical/SHEQ Manager will compile environmental policies and procedures.	✓	There are various procedures available for the site such as a Vegetation Clearing Process and an Alien and Invasive Vegetation Management.
The Technical/SHEQ Manager will liaise with interested and affected parties on environmental issues of common concern.	NA	No environmental issues of common concern have occurred to date.
The Technical/SHEQ Manager will track and control the lodging of any complaints regarding environmental matters.	✓	A complaints and grievance procedure is in place for the management of complaints.
Objective 2: Protection of indigenous natural vegetation, fauna and maintenance of rehabilitation.		
Rehabilitate disturbed areas should the previous attempt be unsuccessful.	✓/X	Rehabilitation was conducted successfully following the conclusion of construction except for the occurrence of some remnant building rubble that remained on site.
Any vegetation clearing that needs to take place as part of the maintenance activities must be done in an environmentally friendly manner, including avoiding the use of herbicides and using manual clearing methods wherever possible.	✓	Cutting of grass and the maintenance of vegetation is undertaken by a designated team. No concerns noted during this audit period.
Vehicle movements must be restricted to designated access roads.	✓	Vehicle movement is restricted to the designated access roads.
Existing roads must be maintained to ensure limited erosion and impact on areas adjacent to roadways.	✓/X	Minimal erosion recorded at a stormwater drain originating from an internal road.
Maintain erosion control measures implemented during the construction phase (i.e. run-off attenuation on slopes (bags, logs), silt fences, storm water catch-pits, and shade nets).	✓/X	Some erosion control measures were observed such as a sloped gradient toward a stormwater drain.

Impact Management Actions	Compliance Results	
	✓/X/NA	Comments/ Findings/ Recommendations
Develop and implement an appropriate storm water management plan for the operation phase of the power line and on-site substation.	✓/X	Storm water management plan is available, with its implementation partially successful.
Site access should be controlled and only authorised staff and contractors should be allowed on-site.	✓	Site access is being controlled.
Notice boards stating that fauna and flora may not be collected, harvested etc. should be placed at the entrances to the site.	X	Notices are not yet in place, but the HSE officer noted that they will be placed soon.
Any maintenance activities should avoid listed plant species and strive to keep the footprint as low as possible.	✓	Maintenance activities remain within the authorised boundary.
No herbicides should be used and if vegetation clearing needs to take place, this should be done by hand.	✓	Manual handling of invasive vegetation undertaken.
An on-going alien plant monitoring and eradication programme must be implemented, where necessary.	✓/X	Some occurrences of alien plants were observed.
The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden.	✓	No incidents of poaching have been reported on site.
A botanist and/or ecologist familiar with the vegetation of the area should monitor the rehabilitation success and alien plant removal on an annual basis. The monitoring should be undertaken until the rehabilitation is considered adequate and sufficient.	NA	Rehabilitation has been successful to the opinion of the ECO.
All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.	X	There was no hazardous chemical store on site during the time of the audit, with a high volume of fuel spills where the maintenance team drives.
Spill kits must be kept on-site.	✓	Spill kits are available on site.
A botanist familiar with the vegetation of the area should monitor the rehabilitation success and alien plant removal on an annual basis.	X	Provide evidence that rehabilitation is annually monitored by a botanist.
A faunal/ avifauna incident register must be maintained on site.	✓/X	A faunal/ avifauna incidents register platform is available, a formal form is recommended to be kept on site.
Implement an animal removal plan to ensure safety of workers and fauna.	X	No animal removal plan was made available.
Regular monitoring for erosion post-construction to ensure that no erosion problems have developed as a result of the past disturbance.	✓/X	No proof of erosion monitoring was provided.
All declared alien species must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). There must be an alien species monitoring and eradication program to prevent encroachment of these problem plants for the duration of the operation. The eradication and monitoring program must aim to address alien plant problems within the whole site, not just the development footprint.	✓/X	Although present on site, alien vegetation occurrence was very low. It is noted that a new service provider is being appointed.
A rehabilitation strategy for alien plant species must be implemented after construction is completed until the desired outcome is reached.	NA	Construction has been concluded over 2 years ago.
Regular monitoring must be undertaken for alien plant invasion, which is likely to occur in previously disturbed areas or in areas receiving runoff from the hardened surfaces of the infrastructure.	X	No proof of Alien Invasive Plant monitoring is available.
The washing of panels during maintenance must be done with biodegradable soaps to avoid soil contamination and the poisoning of small animals.	✓	Panels are washed with clean water provided by Heineken.

Impact Management Actions	Compliance Results	
	✓/X/NA	Comments/ Findings/ Recommendations
Any potentially dangerous fauna such as snakes or fauna threatened by the maintenance and operational activities must be removed to a safe location.	✓	Snakes are relocated safely- if encountered.
Objective 3: Protection of avifauna from collision and electrocution.		
Post-construction surveys during operation with a minimum of 2 surveys of 3 days in extent during a six month period (including the peak wet season) must be undertaken. The surveys aim to obtain mortality data from birds colliding with the panels to advise on appropriate mitigation measures to be implemented to reduce potential bird mortalities. The surveys should be conducted in a regular and systematic manner by means of direct observations and carcass searches. A management programme must be compiled to assess the efficacy of applied mitigation measures and consult or change measures to reduce on-going mortalities when detected. Additional mitigation measures must be tested or applied, especially if mortalities include birds of prey and species of conservation concern.	NA	No monitoring has been conducted to date as is not a current requirement.
The post-construction monitoring must quantify mortalities (especially vulture mortalities) caused by the power line network. The information could then be used to inform the electrical infrastructure mortality incident register. Monitoring must be implemented once a month for at least one year. All searches should be done on foot. A management programme must be compiled to assess the efficacy of applied mitigation measures and consult or change measures to reduce on-going mortalities when detected. Additional mitigation measures must be tested or applied, especially if mortalities include birds of prey and species of conservation concern.	NA	No monitoring has been conducted to date as is not a current requirement.
Any electrocution and collision events that occur should be recorded, including the species affected and the date. If repeated collisions occur within the same area, then further mitigation and avoidance measures may need to be implemented.	NA	No Avifaunal monitoring is currently being conducted- subsequently there is no record of events occurring.
Bird nests must be removed when nest-building attempts are noticed.	NA	As no monitoring is currently being undertaken, no record of nests where available.
Reduce or minimise the use of outdoor lighting to avoid attracting birds to the lights or to reduce potential disorientation to migrating birds.	✓	Lights are downturned where practical.
Report avifauna mortalities (number locality and species) to the Electrical Energy Mortality Register at the Endangered Wildlife Trust.	NA	No evidence could be provided that avifaunal mortalities, as no monitoring is being conducted.
Objective 4: Minimise soil degradation, erosion and alien plant invasion.		
Ensure dust control on site through wetting of denuded areas or the use of an appropriate dust suppression measure.	✓	No dust emissions noted during this audit period.
Maintain erosion control measures implemented during the construction phase (i.e. run-off attenuation on slopes (sand bags, logs), silt fences, storm water catch-pits, and shade nets).	✓/X	Minimal occurrence of erosion observed during the audit.
Control depth of excavations and stability of cut faces/sidewalls.	NA	No excavations open during this audit period.
Regular monitoring by the operation and maintenance team for alien plants at the site should occur and could be conducted simultaneously with erosion monitoring.	✓/X	Alien plant invasion is usually monitored, but at current a new service provider is being appointed.
Objective 5: Minimise dust and air emissions.		
Roads must be maintained that will ensure that nuisance to the community from dust is not visibly excessive.	✓	Internal roads are being maintained.
Appropriate dust suppression must be applied to the roads as required to minimise/control airborne dust.	✓	No dust emissions noted during this audit period.
Speed of vehicles must be restricted on site, as defined by the Environmental Manager.	✓	Speed sign posted at the entrance gate to site.

Impact Management Actions	Compliance Results	
	✓/X/NA	Comments/ Findings/ Recommendations
Vehicles and equipment must be maintained in a road-worthy condition at all times.	✓/X	As a large volume of spills were observed on the internal roads, all vehicles are clearly not being maintained well.
Objective 6: Ensure the implementation of an appropriate fire management plan and general management measures during the operation phase.		
Provide adequate firefighting equipment on site and establish a firefighting management plan during operation.	✓	Firefighting equipment is available on site.
Provide fire-fighting training to selected operation and maintenance staff.	✓/X	Firefighting training, to be confirmed.
Ensure that appropriate communication channels are established to be implemented in the event of a fire.	✓/X	Communication channels specified in emergency preparedness plan are to be verified.
Fire breaks should be established where and when required. Cognisance must be taken of the relevant legislation when planning and burning firebreaks (in terms of timing, etc.).	✓	Fire breaks are maintained on site.
Upon completion of the construction phase, an emergency evacuation plan must be drawn up to ensure the safety of the staff and surrounding land users in the case of an emergency.	✓	Emergency preparedness plans are in place.
Contact details of emergency services should be prominently displayed on site.	✓/X	Emergency contact details being displayed- to be confirmed.
Road borders must be regularly maintained to ensure that vegetation remains short and that they therefore serve as an effective firebreak.	✓	Vegetation is being maintained. Regular grass cutting on site is evident.
Staff and general trips to the site should occur outside of peak traffic periods.	✓	Travel to site does not take place during peak traffic.
Should panels be required to be replaced, the following will apply: » Materials and panels are to be stored within the previously disturbed construction laydown area. No disturbance of areas outside of these areas should occur. » Full clean-up of all materials must be undertaken after the removal and replacement of the solar panel arrays and associated infrastructure is complete, and disturbed areas appropriately rehabilitated. » Most of the materials used for solar panel systems can be recycled. The majority of the glass and semiconductor materials can be recovered and re-used or recycled. Recyclable materials must be transported off-site by truck and managed at appropriate facilities in accordance with relevant waste management regulations. No waste materials may be left on-site. » Waste material which cannot be recycled shall be disposed of at an appropriately licensed waste disposal site or as required by the relevant legislation.	✓	No panel replacements have been reported during this audit period.
Objective 7: Minimise the potential impact on farming activities and on the surrounding landowners.		
Effective management of the facility to avoid any environmental pollution focusing on water, waste and sanitation infrastructure and services.	✓/X	A high volume of spills on the internal service road may lead to environmental pollution from run-off or infiltration.
Vehicle movement to and from the site should be minimised as far as possible.	✓	Working hours allow for minimal movement to and from site. Security personnel work in shifts and the maintenance team works as required.
Infrastructure such as fencing and/or gates must be maintained in the present condition or repaired if disturbed due to project activities.	✓	No concerns noted around fencing and gates during this audit period.
Maintain the general appearance of the facility as a whole, including the PV panels, servitudes and the ancillary structures.	✓	Appearance of the facility is being maintained.
Maintain roads and servitudes to forego erosion and to suppress dust.	✓	Roads are being maintained and low speed limits are imposed on site.
Monitor rehabilitated areas, and implement remedial action as and when required.	✓	Rehabilitation was conducted and no additional intervention is required on the facility.

Impact Management Actions	Compliance Results	
	✓/X/NA	Comments/ Findings/ Recommendations
Objective 8: Appropriate handling and management of hazardous substances, waste and dangerous goods.		
Hazardous substances (such as used/new transformer oils, etc.) must be stored in sealed containers within a clearly demarcated designated area.	X	No designated HCS cage is available.
Storage areas for hazardous substances must be appropriately sealed and banded.	✓	Designated HCS storage cage was available on site during the time of the audit.
All structures and/or components replaced during maintenance activities must be appropriately disposed of at an appropriately licensed waste disposal site or sold to a recycling merchant for recycling.	✓/X	The safe disposal of additional solar panels is in the process of being negotiated.
Care must be taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Handling of these materials should take place within an appropriately sealed and banded area. Should any accidental spillage take place, it must be cleaned up according to specified standards regarding bioremediation.	✓/X	A high volume of spills from a vehicle often travelling on site confirms that spills are not being dealt with adequately. The generator utilised for panel washing did not have a drip tray underneath as panel washing was being conducted.
Disposal of waste must be in accordance with relevant legislative requirements, including the use of licensed contractors.	✓/X	The current waste management service provider is not able to provide final disposal certificates of waste being disposed of.
Waste handling, collection, and disposal operations must be managed and controlled by a waste management contractor.	✓/X	The current waste management service provider is not able to provide all required documentation.
Used oils and chemicals: » Appropriate disposal must be arranged with a licensed facility in consultation with the administering authority. » Waste must be stored and handled according to the relevant legislation and regulations.	✓/X	As the current waste management contractor is not able to provide proof of all safe disposal, correct waste disposal cannot be confirmed.
General waste must be recycled where possible or disposed of at an appropriately licensed landfill.	✓/X	Separated waste disposal bins are available, but there is no recorded evidence of waste being recycled or taken to a licensed landfill site.
Hazardous waste (including hydrocarbons) and general waste must be stored and disposed of separately.	✓	Waste streams are separated on site.
Objective 9: Enhancement of positive social impacts and mitigation of negative social impacts.		
Adopt a local employment policy to maximise the opportunities made available to the local labour force.	✓	When required, general workers are sourced from the local community.
Establish vocational training programs for the local labour force to promote the development of skills.	✓	Required training has been provided for the development of the local labour force during the construction phase.

APPENDIX D: MAP OF AUDIT ROUTE ON THE DAY OF THE AUDIT

