Our reference: SO-ENV-1335

29 November 2024

Your Ref: EA nr EMS/1/(e)/08/32

Department of Economic, Small Business Development, Tourism and Environmental Affairs
113 Saint Andrews Street,
St Andrews Building
3rd Floor , Room 8
Bloemfontein
9301
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Delivered via e-mail: mkhosana@destea.gov.za
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Attention: Deputy Director: Environmental Impact Assessment

ENVIRONMENTAL AUTHORISATION EXTERNAL REPORT SUBMISSION

The Environmental Authorisation applicable for Sasol South Africa Limited, Sasolburg Operations was externally audited during November 2022. The external audit was conducted to comply to the requirement contained in Chapter 5 part 3 of the Environmental Impact Assessment Regulations.

Sub regulation 34 (6) of the regulations also requires the holder of the environmental authorisation to notify all potential and registered interested and affected parties of the submission of the report and make the report available on request to anyone and on a publicly accessible website, where available.

The external audit reports will be available on https://www.sasol.com/esg/environmental-audit-reports.

Sasolburg Operations appointed WSP to conduct the external audits on all Environmental Authorisations and accompanying Environmental Management Programs.

Attached, please find the compliance audit report for the Establishment of Ethylene Purification Unit /EPU 5) Facility with reference EMS/1/(e)/08/32 dated May 2023.

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The Audit report noted sufficient mitigation of environmental impacts and level of compliance to the Environmental Authorisation and Environmental Management Program (EMPr) therefore no recommendations for improvement were made.

Further, in alignment with Chapter 5 Part 4 of the regulation, regulation 36 allows amendment to the impact management action of an EMPr to be affected immediately by the holder of the environmental authorisation and reflect it in the next environmental audit report. Annexure B contains the mitigations measures identified during the environmental impact assessment, for the operational phase of the project, defining the impact management outcome and impact management actions to enable compliance to this regulation.

No impact management outcome or impact management action requires amendment for the Establishment of Ethylene Purification Unit /EPU 5) Facility.

Yours faithfully
Signed by: Johann Van Wyk
Signed at:2024-11-29 11:51:46 +02:00
Reason:I approve

Johann Van Wyk

Johann van Wyk
Senior Manager Environment and Product Stewardship (acting)

Tel: +27 16 960 2398
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Annexure A

Audit report.

Establishment of Ethylene Purification Unit /EPU 5) Facility– ref (EMS/1/(e)/08/32)

Sasol South Africa Ltd

EPU5 ENVIRONMENTAL AUTHORISATION (REFERENCE: EMS/1(E)/08/32) AND ENVIRONMENTAL MANAGEMENT PROGRAMME

Audit Report: November 2019 - January 2023

MAY 2023

CONFIDENTIAL

Sasol South Africa Ltd

EPU5 ENVIRONMENTAL AUTHORISATION (REFERENCE: EMS/1(E)/08/32) AND ENVIRONMENTAL MANAGEMENT PROGRAMME

Audit Report: November 2019 - January 2023

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 41104347

DATE: MAY 2023

Sasol South Africa Ltd

EPU5 ENVIRONMENTAL AUTHORISATION (REFERENCE: EMS/1(E)/08/32) AND ENVIRONMENTAL MANAGEMENT PROGRAMME

Audit Report: November 2019 - January 2023

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Final EPU 5 EA and EMPr Audit Report			
Date	30 May 2023			
Prepared by	Matilda Mbazo			
Signature				
Checked by	Ian Malloy			
Signature				
Authorised by	Anri Scheepers			
Signature				
Project number	41104347			
Report number	1			
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SIGNATURES

PREPARED BY

Matilda Mbazo

Assistant Consultant

REVIEWED BY

Ian Malloy
Senior Environmental Consultant

This Environmental Authorisation Audit report (Report) has been prepared by WSP Group Africa (Pty) Ltd (WSP) on behalf and at the request of Sasol South Africa Ltd (Client), to comply with the environmental audit requirements provided for in Regulation 34 of the EIA Regulations, 2014.

Unless otherwise agreed by us in writing, we do not accept responsibility or legal liability to any person other than the Client for the contents of, or any omissions from, this Report.

To prepare this Report, we have reviewed only the documents and information provided to us by the Client or any third parties directed to provide information and documents to us by the Client. We have not reviewed any other documents in relation to this Report, except where otherwise indicated in the Report.

PRODUCTION TEAM

SASOL SASOLBURG

SHE: Environment Specialist	Suyen Van Zyl
Area Manager	Ludolph Human
Area Operator	Mandla Hlogwane

WSP

Auditor	Matilda Mbazo
Lead Auditor	Ian Malloy
Project Director/ Quality Assurance	Anri Scheepers

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AUDITORS CV

1 INTRODUCTION

1.1 TERMS OF REFERENCE

WSP Group Africa (Pty) Ltd (WSP) as an independent environmental consultant was appointed by Sasol Chemicals, a division of Sasol South Africa Limited, to undertake an external environmental compliance audit of the commitments contained in the Environmental Authorisation (EA) (reference number EMS/1(e)/08/32) and Environmental Management Programme (EMPr) of the Ethylene Purification Unit Five (EPU5) and to compile an audit report according to the requirements of the National Environmental Management Act (No. 107 of 1998), as amended (NEMA).

The details of the EA (initially Record of Decision (RoD)), the amendment of the EA and the EMPr audited for compliance for the establishment of EPU5 Facility at the Sasol One Site are provided below:

- EA for the EPU5 Facility located at the Sasol Polymers (at the Sasol One site) in Sasolburg (reference number: EMS/1(e)/08/32), dated 19 January 2009 and issued to Monomers, a division of Sasol Polymers by the Department of Tourism, Environmental and Economic Affairs (DTEEA);
- EMPr for the Proposed EPU5 Facility at the Monomers division at the Sasol One site, Sasolburg, dated 23 October 2013. The EMPr was completed and submitted to the Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA).
- The amendment of the EA for the EPU5 Facility located at the Sasol Monomers (at the Sasol One site) in Sasolburg (reference number: EMS/1(e)/08/32), dated 18 September 2019 and issued to Monomers, a division of Sasol Polymers by the Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA). The amendment include:
    - Change of EA contact person
    - Change of site coordinates
    - Change of the activity under management
    - Change of conditions under construction and operation of the facility
    - Change under Annexure 1: Reasons for decision

The latest amendment was included in the audit checklist in section 4.

1.2 SASOL SASOLBURG – ETHYLENE PURIFICATION UNIT FIVE (EPU 5)

Sasol Polymers is a leading producer of monomers, polymers, chlor-alkali chemicals and mining reagents. Monomers, a division of Sasol Polymers, operates an existing facility at the Sasol One Complex in Sasolburg. The facility is responsible for, amongst others, the production and distribution of ethylene (C_2H_4). Sasol Synfuels based in Secunda, have increasing volumes of C_2 rich gas, from an existing process, which is a mixture of ethylene and ethane. As a result, their C_2 separation facility was exceeding capacity and required expansion. Monomers constructed a separation facility called the Ethylene Purification Unit (EPU5) Facility, in Sasolburg within the Free State Province, to process this additional C_2 rich gas.

The feed stream containing the C_2 rich gas for the new EPU5 Facility is transported from Secunda to Sasolburg via an existing pipeline. The new Facility separates the Polymer grade Ethylene from the Ethane feed and thereafter the ethylene is sent to an existing customer distribution network.

Furthermore, the Ethane is sent to an existing Monomers operational facility in order to further produce polymer grade ethylene. The EP 5 Facility consists of the following units:

- A caustic scrubber system for the removal of Carbon Dioxide (CO_2) from the C_2 feed stream;
- C_2 feed drying system comprising of cooling and adsorption by molecular sieves;
- A propylene refrigeration system comprising of a propylene compressor and associated equipment;
- A cooling water supply system comprising a cooling water tower and associated equipment;
- An ethylene-ethane splitter unit; and
- Associated infrastructure and utility systems.

Overall, the EPU5 maximises the use of the existing pipeline configuration and cracking capacities, and raises the amount of ethylene produced by enabling better use of existing feedstocks.

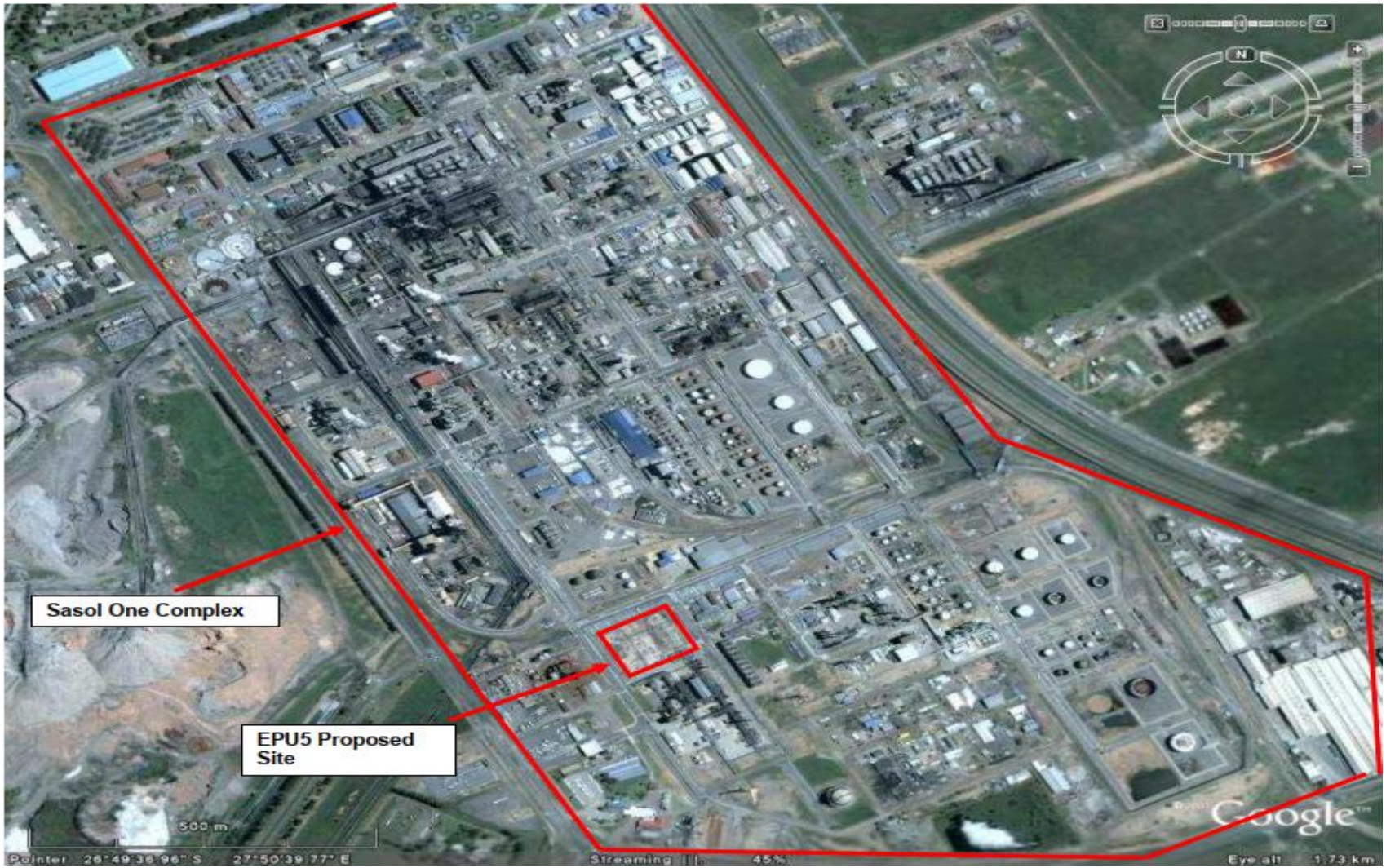

Figure 1-1 - EPU5 Site Location

1.3 PROJECT TEAM

Ian Malloy and Matilda Mbazo completed a site inspection of the EPU5 Facility against the EA conditions (EMS/1(e)/08/32) at Sasol Polymers on **29 March 2023**.

The draft external audit report was compiled in April 2023 and finalised in May 2023. This report will be submitted to the DETSEA by Sasol in 2023.

Quality assurance is a critically important part of WSP's consulting services which aim to ensure both delivery of high-quality work and provide legal and commercial protection to the company. Quality assurance of this audit report was undertaken by Anri Scheepers.

The project team is summarised in **Table 1-1** and Curricula Vitae are included as **Appendix A**.

Table 1-1 - Details of the Audit Team

Audit Team	Role	Experience
Ian Malloy	Auditor	BEng Chemical BEng (Hons) Environmental MEng Water Engineering (in progress)
		Nine Years' Experience
		Ian is a Senior Environmental Consultant at WSP with over 9 years' experience in the environmental management industry. Ian graduated from the University of Stellenbosch with a BEng in Chemical Engineering in 2016 and a BEng Hons in Environmental Engineering in 2019. He is currently completing a MEng in Water Engineering. Ian has specialised in waste planning, environmental management and auditing, and environmental engineering. Ian has been involved in numerous waste and water management, and construction related projects in South Africa. The projects completed include EIAs, Water Use Licence (WUL) and Waste Management Licence (WML) Applications, amendment processes, developing IWMPs for District and Local Municipalities, developing EMPrs, conducting environmental compliance audits of EAs, EMPrs, WULs, and WMLs, conducting GRAP 17 and 19 assessments of landfill sites, and sampling and monitoring of groundwater and marine water.
Matilda Mbazo	Auditor	BSc (Hons) Geography
		Matilda graduated from the University of Wits with a BSc honours in Geography in 2023 and is currently completing her MSc in Environmental Science. She has 1 year experience in environmental management and currently provides technical and strategic input on a diverse range project in environmental management and environmental compliance audits.
Anri Scheepers	Review	BA (Hons) Geography
		15 Years' Experience
		Anri graduated from the University of Johannesburg with a BA honours in Geography in 2007 and has 15 years' work experience. Anri is qualified as a Lead Auditor and has undertaken legal compliance auditing, including environmental authorisations, waste management licences, water use licences and EMPs. In addition, she has undertaken general site assessments to determine

		compliance against local, provincial and national environmental legislation

2 AUDIT SCOPE

WSP was appointed by Sasol to conduct the environmental compliance audit for the EPU5 Facility at the Monomers division. This report provides an overview of the level of compliance with the conditions contained in the EA and EMPr as indicated in **Section 1.1**. The site audit was undertaken on **29 March 2023** at the Sasol One Site, Sasolburg Plant.

The objective of the audit was to:

- Assess the level of compliance with the commitments of the EA for the EPU5 Facility;
- Assess the level of compliance with the commitments of the EMPr that was submitted part of the Scoping Report for the licencing of the second EPU5 Facility, as agreed by DESTEA. This includes the assessment of compliance of the approved amendments of the EMPr;
- Assess the extent to which the avoidance, management and mitigation measures provided for in the EMPr for the operation of the EPU5 Facility were implemented;
- Identify and assess any new impacts and risks that result from undertaking the activity;
- Critically evaluate the effectiveness of the EA;
- Identify shortcomings in the EA and EMPR; and
- Identify the need for any changes to the avoidance, management and mitigation measures provided for in the EA.

The EIA Regulations are considered applicable to the PSA Unit Operations. Regulation 34, of the EIA Regulations, provides for the auditing of an environmental authorisation, EMPr and closure plan. Furthermore, Appendix 7 of Government Notice Regulation (GNR) 982 outlines the required audit report content. The 2014 Regulations, as amended, refer to a minimum audit frequency of five years. This audit is designed to meet the requirements of Regulation 34 of the EIA Regulations, 2014. **Table 2-1** indicates where the requirements of Section 34 and Appendix 7 are met within this audit report.

Table 2-1 - Regulation 34 and Appendix 7 of the EIA Regulations (2014)

Sub-Section	Requirement	Report Section Reference
34 (2)a	The environmental audit report must be prepared by an independent person with the relevant environmental auditing expertise.	**Sub-section 1.3** CV's provided in **Appendix A**
34(2)b	The environmental audit report must provide verifiable findings, in a structured and systematic manner, on: (i) the level of performance against and compliance of an organisation or project with the provisions of the requisite environmental authorisation or EMPr and, where applicable, the closure plan; and (ii) the ability of the measures contained in the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity;	Audit checklist tables provided in **Section 4**
3(a)	The environmental audit report must determine	**Section 4**

Sub-Section	Requirement	Report Section Reference
	(a) the ability of the EMPr, and where applicable the closure plan, to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis and to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility; and	
3(b)	The environmental audit report must determine the level of compliance with the provisions of environmental authorisation, EMPr and where applicable, the closure plan.	**Section 4**
4(a)	Where the findings of the environmental audit report indicate: (a) insufficient mitigation of environmental impacts associated with the undertaking of the activity (b) insufficient levels of compliance with the environmental authorisation or EMPr the holder must, when submitting the environmental audit report to the competent authority submit recommendations to amend the EMPr or closure plan in order to rectify the shortcomings identified in the environmental audit report	**Section 4**
a	Details of- (i) the independent person who prepared the environmental audit report; and (ii) the expertise of independent person that compiled the environmental audit report.	**Sub-section 1.3** CVs provided in **Appendix A**
b	A declaration that the independent auditor is independent in a form as may be specified by the competent authority.	**Sub-section 8**
c	An indication of the scope of, and the purpose for which, the environmental audit report was prepared.	**Sub-section 1.1** and **Section 2**
d	A description of the methodology adopted in preparing the environmental audit report.	**Section 3**
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 on-going 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 4** and **Sub-section 4.3**
f	A description of any assumptions made, and any uncertainties or gaps in knowledge.	**Sub-sections 2.1** and **2.2**

Sub-Section	Requirement	Report Section Reference
g	A description of any consultation process that was undertaken during the course of carrying out the environmental audit report.	**Sub-section 3.2**
j	A summary and copies of any comments that were received during any consultation process.	Comments received during the consultation process were included as comments in the audit checklist tables in **Section 4**
k	Any other information requested by the competent authority.	None requested

2.1 DISCLAIMER

This Report has been prepared by WSP on behalf and at the request of Sasol in terms of Regulation 34 of the EIA Regulations.

Unless otherwise agreed by us in writing, we do not accept responsibility or legal liability to any person other than the Client for the contents of, or any omissions from, this Report.

To prepare this Report, we have reviewed only the documents and information provided to us by the Client or any third parties directed to provide information and documents to us by the Client. We have not reviewed any other documents in relation to this Report and except where otherwise indicated in the Report.

The findings, recommendations and conclusions given in this report are based on the author's best scientific and professional knowledge, as well as available information. This report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken; WSP and its staff reserve the right to modify aspects of the report including the recommendations if and when new information may become available from on-going research or further work in this field or pertaining to this investigation.

Although WSP exercises due care and diligence in rendering services and preparing documents, WSP accepts no liability, and Sasol, by receiving this document, indemnifies WSP and its directors, managers, agents and employees against all actions, claims, demands, losses, liabilities, costs, damages and expenses arising from or in connection with the services rendered, directly or indirectly by the use of the information contained in this document.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of this report which are supplied for the purposes of inclusion as part of other reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If this report is used as part of a main report, the report in its entirety must be included as an appendix or separate section to the main report.

2.2 ASSUMPTIONS AND LIMITATIONS

WSP noted the following assumptions and limitations during the audit:

- The information provided by Sasol is up to date and accurately represents the Sasol Sasolburg operations;
- WSP viewed as much of the operational area as possible given the timeframe and access limitations;
- Findings made within the previous audit reports are correct; and
- Site photographs were not provided in the audit report due to the onsite Sasol Sasolburg policy that disallows any photographs being taken on site. Where conditions were deemed compliant, and the evidence provided was onsite observation and verbal confirmation to support the findings.; this was observed by the Auditors.

This Report has been prepared by WSP at the request of Sasol and the Terms of Reference as detailed in **Section 1.1**.

3 AUDIT METHODOLOGY

The International Organisation of Standardisation (ISO) 14010, ISO 14011 and ISO 14012 guideline documents were utilised as a template during the compliance audit process. This methodology ensures that the compliance audit was conducted in a systematic and independent manner that was documented and objectively evaluated to determine compliance to the EA commitments.

The audit process comprised the following:

- Confirmation of the audit checklist;
- Site inspection (29 March 2023);
- Review of documentation relevant to the commitments of the EA and EMPr (e.g. records, permits, certificates, maintenance logs and records, monitoring results, management plans, previous audit reports, specialist reports (where available and applicable), etc.); and
- Compilation of an audit report.

3.1 AUDIT CHECKLIST

WSP compiled a checklist of the EA and EMPr commitments, which was used as an auditing compliance tool. Refer to **Table 4.1** and **Table 4.2** for the audit checklist.

3.2 SITE INSPECTION AND INTERVIEWS

An onsite inspection was conducted on **29 March 2023**, where findings and observations were recorded and are summarised in **Section 4**. Key personnel interviewed included:

- Suyen Van Zyl
- Ludolph Human
- Mandla Hlogwane

3.3 INFORMATION CONSIDERED

Information related to the following categorises was reviewed, where required, and used to evaluate compliance:

- Sasol South Africa Limited through its Sasolburg Operations' Gas Loop, Utilities and Chemicals, Air Emissions Licence (AEL) (reference number: FDDM-MET-2013-23-P3) (November 2019);
- Sasolburg and Ekandustria Operations Annual Emission Report (Reference no: FDDM-MET-2013-23-P3) dated 29 August 2022;
- Air Emissions Licence (AEL) (reference number: FDDM-MET-2013-20-R1);
- Sasolburg and Ekandustria Operations Annual Emission Report (Reference no: FDDM-MET-2013-20-R1) dated 29 August 2022;
- EPU5 Facility Pipe Thickness Testing Report (NDTechnologies, October 2017) ;
- Wax and Solvents Environmental Waste Register Revision 1 (undated). Waste inventory for the Wax and Solvents;
- Noise Survey and Impact Assessment for Hearing Conservation Purposes (Reference no: SO-152-2020-TM-N) dated 16 March 2021;
- Noise exposure verification and assessment for hearing conservation purposes, Sasolburg and Ekandustria Operations; Wax, Chemical and Solvents; Chemicals, Monomers; EPU5, Section 4500 (Sasol Approved Inspection Authority for Occupational Health and Hygiene, April 2022);

- External Audits of EAs/RoDs/EMPrs: Environmental Authorisation: G&U: Establishment of Ethylene Purification Unit (EPU) Facility Audit Report by Centre for Environmental Management (CEM) (Reference no: CEM 2018/141) dated November 2018;
- DESTEA amendment letter;
- Application for Amendment of an EA (Reference no: EMS/1(e)08/32) dated 18 September 2019
- Sasolburg Operations Piping Inspection Plant – Plant Register, EPU5 Section 4500 (25 October 2018)
- Sasol SAP Piping Inspection Plan (PIP) for EPU5; Scheduling overview list form: Maintenance Scheduling Overview List (viewed 29 March 2023);
- Sasol Sasolburg & Ekandustria Operations ISO14001 Certificate issued by DQS (Reference no : 40600394 UM15) dated 01 January 2022
- Integrated Water and Waste Management Plan (IWWMP) Rev 1 – report number: SO-env-929 (Sasolburg Operations, December 2021) that includes the:
    - Stormwater Management Plan (SWMP, 2021);
    - Rehabilitation Strategy and Implementation Plan (RSIP);
    - Water Conservation and Demand Management (WC/DM);
    - Malfunctions register;
    - Water management;
    - Groundwater management;
    - Waste management;
    - Contaminated Water and Wastewater Management;
    - Effluent Management; and
    - Land management.
- Storm Water management Plan Sasolburg Operations (File no: 27/2/2C222/6/4) (Sasolburg Operations, December 2021);
- Sasolburg and Ekandustria Operations ISO 45001:2018, ISO 9001:2015 and ISO 14001:2015 Recertification Audit Report (DQS Management Systems Solutions, November 2021);
- Procedure for the management of waste on the Sasolburg Operations' Sites (document number: SSP-S-014) (Sasolburg Operations, October 2020)
- The reporting, investigation and recording of environmental incidents (document number: SSP-S-013) (Sasolburg Operations, July 2019);
- Incidents register from June 2021 – July 2022. No incidents recorded for July 2019 – June 2020 and from August 2022 – March 2023;
- Sasol SAP Waste Management Notification to waste management service provider for removal of waste from plant, EPU5 (viewed 29 March 2023); and
- Various email correspondence to confirm details on site.

3.4 ASSESSMENT EVALUATION METHODOLOGY

The consolidated report contains all commitments, which were formulated as part of the original and amended EA and EMPr. Each commitment contained in the audit checklist was assessed by reviewing site documentation, interviewing employees, and undertaking a site inspection. The application of the EMPr was assessed and the level of compliance rated (compliance categories contained in **Table 3-1**). The compliance of the operations listed in **Section 1.2** was assessed.

Table 3-1 Levels of Compliance

Compliance Level	Definition
Compliant (C)	When an activity or commitment has been implemented, completed, is on-schedule or is maintained on an ongoing basis. Condition/mitigation measure/commitment has been achieved with evidence provided in the form of a document or site verification.
Non-compliant (NC)	When an activity or commitment has not been complied with in its entirety/certain aspects thereof have not been addressed. When a commitment has not been undertaken, not been completed according to plan, or where any unlawful actions have been identified. Non-compliant conditions are given target completion dates as follows: — Short term: 0 – 6 months. — Medium term: 6 – 12 months. — Long term: 12 - 18 months
Not applicable (N/A)	The condition, commitment and/or mitigation measure is not applicable or is to be revised in accordance with current practice. A “Not Applicable” finding is also noted in event where such condition, commitment and/or mitigation measure is not yet relevant but is still relevant for future activities.

4 AUDIT FINDINGS

4.1 ENVIRONMENTAL AUTHORISATION

Table 4-1 provides a compliance rating of the EA commitments that were used as the audit standard.

Table 4-1 - **Environmental Authorisation (EM1/1(e)/08/32 dated 19/01/09) and subsequent Amendments: Audit Findings**

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
1.Scope of Authorisation				
1.1	Authorisation of the activity is subject to the conditions contained in this document, which conditions form part of the environmental authorisation and are binding on the holder of the authorisation.	**N/A**	The Holder of the Authorisation and External Auditor noted this condition.	None.
1.2	The holder of the authorisation shall be responsible for ensuring compliance with the conditions by any person acting on his or her behalf, including, but not limited to an agent, sub-contractor, employee or person rendering a service to the holder of the authorisation.	**C**	Sasol as the holder of the authorisation acknowledges that responsibility for ensuring compliance with the EA and provides environmental management awareness training to staff, service providers, contractors and visitors to ensure that everyone employed or acting on their behalf is aware that they need to comply with the EA and the EMPr conditions. Induction training was provided to all staff, service provides, contractors and visitors. *Evidence*: ▪ Verbal confirmation ▪ Staff and visitors training material and registers ▪ Onsite Observation of staff and visitors training.	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
1.3	The authorised activity may only be carried out at the property/site indicated above.	C	The authorised activity is carried out at the property/site indicated within the EA location details. *Evidence*: ▪ EA location details (reference number EMS/1(e)/08/32) ▪ Google Earth ▪ Onsite Observation	None.
1.4	Any changes to, or deviations from, the project description set out in this authorisation must be approved, in writing, by the Department, before such changes or deviations may be effected. In assessing whether to grant such approval or not, the Department may request such information as it deems necessary to evaluate the significance and impacts of such changes or deviations and it may be necessary for the holder of the authorisation to apply for further authorisation in terms of the regulations.	C	The Department authorised one amendment to the EA to date. The last amendment was authorised in September 2019.	None.
1.5	This environmental authorisation is valid for a period of 2 (two) years from the date of issue. If commencement of the activity does not occur within that period, the authorisation lapses and a new application for and Environmental Authorisation (EA) must be made.	N/A	Noted. This condition is outside the audit period and refers to a requirement prior to commencement and was therefore not audited. The EA was issued in 2009 and the activity commenced within specified time. The facility was operational.	None.
1.6	This authorisation does not negate the holder of the authorisation's responsibility to comply with any other statutory requirements that may be applicable to the undertaking of the activity.	N/A	Noted. This audit did not cover a legal review of compliance of the EPU5 and SSO with all statutory requirements and whether they were in possession of all the necessary permits, authorisations or any other official documents.	None.
2. Appeal of Authorisation				

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
1.7	The holder of the authorisation must notify all registered interested and affected party, in writing and within 7 (seven) calendar days of the Department's decision to authorise the activity.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement prior to commencement and was therefore not audited.	None.
1.8	The notification referred to in 1.7 must: -			
1.8.1.	specify the date on which the authorisation was issued;	**N/A**	Noted. This condition is outside the audit period and refers to a requirement prior to commencement and was therefore not audited.	None.
1.8.2.	inform the interested and affected party of the appeal procedure provided for in regulation 62; and	**N/A**	Noted. This condition is outside the audit period and refers to a requirement prior to commencement and was therefore not audited.	None.
1.8.3.	advise the interested and affected party that a copy of the authorisation and reasons for decision will be furnished on request.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement prior to commencement and was therefore not audited.	None.
3. Management of the Activity				
1.9	The provisions of the Environmental Management Plan (EMP) which fulfils the requirements of this authorisation must be compiled and submitted to the Department for approval within 14 (fourteen) calendar days of the Department's decision to authorise the activity.	***N/A***	This condition is outside the audit period and refers to a requirement prior to commencement of the construction phase and was therefore not audited. *Evidence:* ▪ Verbal confirmation ▪ Onsite observation	None.
1.10	The EMP must: -			

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
1.10.1	Contain all the information specified in Regulation 385 Section **34**; and	C	The EMPr contains the specified information in Regulation 385 Section 34.	None.
1.10.2	Must specifically allude to detailed descriptions and measure for rehabilitation of the environment after closure of facility.	C	The EMP alludes to detailed descriptions and measure for rehabilitation of the environment after closure of facility. Evidence: ▪ EMPr (EPU5 Facility, AM Meyer, October 2013)	None
1.11	The Department must be notified, within 30 day thereof, of any change of ownership and/or project developer. Conditions imposed in this EA must be made known to the new owner and/or developer and are binding on the new owner and/or developer.	N/A	Noted. There were no changes in ownership of the EA or project developer.	None.
4. Monitoring				
1.12	Records related to compliance/non-compliance with conditions of this authorisation must be kept in good order. Such records should be made available to this Department within seven (7) days from the date of written request from this Department.	C	Records of compliance/non-compliance with conditions of this authorisation were kept in good condition and were readily available, therefore, should be readily available should the Department require them. No request was made by the Department during the audit period for records or documents. In addition, the previous audit was provided with the records of compliance/non-compliance with conditions of this authorisation. *Evidence*: ▪ Onsite Observation ▪ External Audits of EAs/RoDs/EMPrs: Environmental Authorisation: G&U: Establishment of Ethylene Purification Unit (EPU) Facility Audit Report by Centre for Environmental Management (CEM) (Reference no: CEM 2018/141) dated November 2018	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
1.13	Non-compliance with or any deviation from the conditions of this authorisation as set out in the EA is regarded as an offence, and after reasonable provision has been given for remedial action, will be dealt with in terms of Section 24F of the National Environmental Management Act (Act no. 107 of 1998) as well as any other appropriate legal mechanisms.	N/A	Noted. No deviations from the stated conditions within the EA were noted during this audit.	None.
5. Recording and Reporting to the Department				
1.14	The holder of the authorisation must submit an environmental audit report to the department once during operation of the facility (EPU5) and once during decommissioning of the facility. The environmental audit report must:			
1.14.1	Containing the following: - Activity - Targets - Conformance / non-conformance - Performance indicator - Comments	C	CEM conducted an external environmental compliance audit in 2019 and completed an environmental audit report in 2019 with the required information. WSP included the required information in the environmental audit report for the environmental audit completed in 2023. *Evidence* ▪ External Audits of EAs/RoDs/EMPrs: Environmental Authorisation: G&U: Establishment of Ethylene Purification Unit (EPU) Facility Audit Report by Centre for Environmental Management (CEM) (Reference no: CEM 2018/141) dated November 2018	None
1.14.2	This environmental audit report must be compiled by an independent auditor.	C	The environmental audit report was completed by an independent auditor, WSP Group Africa.	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
6. Commissioning of the Activity				
1.15	Seven (7) days prior written notice must be given to the Department that the activity will commence. The notice must include a date on which it is anticipated that the activity will commence.	**N/A**	This condition is outside the audit period and refers to a requirement prior to commencement of the construction phase and was therefore not audited.	None.
7. Construction and Operation of the Facility				
1.16. Fauna and Flora				
1.16.1	Weeds, alien and invasive vegetation must be removed, should ingress occur.	**N/A**	Noted. No ingress of weeds, alien vegetation and invasive vegetation had occurred on site. The Sasol One site is an industrial site and all vegetation was removed from the site. This condition was therefore not applicable and not audited.	None.
1.16.2	Rehabilitation and closure planning must ensure the protection and rehabilitation of flora and fauna within the surrounding area.	**N/A**	Noted. This condition was not applicable there was no intention to cease the operations of the EPU 5 plant. Furthermore, the Sasol One site is an industrial site with no flora or fauna within proximity to the EPU5. This was condition was therefore not audited.	None.
1.17. Soil and Land				
1.17.1	All incidents and spillages must be cleaned up, the area rehabilitated, and the incident closed out in accordance with the Emergency and Preparedness procedure.	**C**	No spillages were recorded or reported for the EPU 5 facility. Black smoke at Monomers from a flare was reported and was caused by lack of steam supplied to the flare resulting in incomplete combustion of vapours. The lack of steam to the flare was due to a power failure from damaged Eskom infrastructure. Sasol has a UPS for the plant, but because the Eskom pylon was damaged for a long period, this drained the back-up energy supply and the plant was shut down. This resulted in more gases (vapours) sent to the flare. No corrective action was required from Sasol as the root cause was due to the damage of the pylon and	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
			not Sasol operations. Sasol could not assist in any manner as Eskom staff were responsible for the repair of the pylon. *Evidence*: ▪ Onsite Observation ▪ Verbal Confirmation	
1.17.2	All chemicals and other hazardous material must be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the store substances. The bunded area must also be able to contain 110% volume of the largest container stored.	C	All hazardous material and chemicals at EPU5 Facility were stored in a designated and bunded area. Sasol personnel confirmed that the bunded area could contain 110% of the stored volume of the largest container stored at the site. *Evidence*: ▪ Onsite Observation ▪ Verbal Confirmation	None.
1.8. Groundwater				
1.18.1	All the surface and run-off from EPU5 Facility will go to Oily Water System (OWS), except for caustic slop which will be contained and then discharged (to OWS) under controlled conditions and thus will not seep or contaminate the groundwater. Methanol storage drum should be kept in a bunded area.	C	All surface run-off from EPU5 Facility goes to the Oily Water Sewer system (OWS), except for caustic slop which is contained within a bund and then discharged (to OWS) under controlled conditions. The OWS leads to the API which is a dirty water dam system designed to separate oil or suspended solids from wastewater discharged by various units at the Sasol One Complex. The caustic tank is placed within bund and sealed with resin. Should a chemical spill occur, a 3rd party service provider would collect and clean it. The pump within bund has potential oil contaminated (POC) stream that is sent to sewer. Methanol storage drum was placed within a bund with a sump to contain any spills. Uncontaminated stormwater is channelled to the clean stormwater sewer system.	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
			Evidence: ▪ Onsite Observation ▪ Verbal confirmation	
1.18.2	The OWS will be continuously monitored and maintained in order to ensure optimum performance.	C	Sasol personnel confirmed that physical maintenance of pipes constructed underground were not easy to maintain. Site wide inspections were conducted on all pipes and boreholes, and groundwater sampling was conducted every 6 months. The boreholes across the Sasol One site were monitored every 6 months. The Auditor reviewed the piping inspection plan for EPU5 facility; this register covers all pipes within the EPU5 facility. Pipe system number and maintenance schedule for the caustic system were available on the Sasol internal SAP system – this maintenance plan consists of a plan date, scheduled date, maintenance description (pipe), with an order number. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018	None.
1.19 Access				
1.19.1	The Existing access road to the site must be used	C	The Auditor observed that the existing access road to the site was the road that was currently used. An access-controlled gate and a permit was required to access the Sasol One site and the EPU5 Facility. *Evidence:*	None

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
			▪ Onsite Observation	
1.20 Surface water pollution				
1.20.1	All construction activities must be undertaken from a designated Contactor Lay Down area, which must be clearly demarcated in the Sasol One footprint.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and was therefore not audited.	None.
1.20.2	All the surface run-off from EPU5 Facility must go to Oily Water System (OWS), except for the caustic slop which must be contained and then discharged to (OWS) under controlled conditions.	**C**	All surface run-off from EPU5 Facility goes to the Oily Water Sewer system (OWS), except for caustic slop which is contained within a bund and then discharged (to OWS) under controlled conditions. The OWS leads to the API which is a dirty water dam system designed to separate oil or suspended solids from wastewater discharged by various units at the Sasol One Complex. Spent caustic was stripped with nitrogen to reduce the hydrocarbons below a specified level before being reused in the scrubber. The purified caustic stream was sent to the existing Chlorine Plant at the Sasol Midlands Site as a process chemical. Clean surface run-off from the process areas, as well as areas outside the process areas such as roads where contamination with oil, heavy hydrocarbons or chemicals can safely be excluded, will be routed to storm water, as it is clean. *Evidence*: ▪ Verbal Confirmation ▪ Ethylene Purification Unit (EPU5) Facility Environmental Impact Assessment (EIA): Scoping Report (Reference no: 1768ES) dated July 2008	None.
1.21. Effluent generation				

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
1.21.1	The effluent generation will be addressed through the treatment, re-cycling and re-use of effluent.	C	Caustic effluent is recycled and reused to neutralise water at the treatment plant (pH adjustment). The CO_2 and hydrocarbons that might be trapped in the caustic effluent are scrubbed and sent to Section 4600 for further treatment. Through the treatment, recycling, or reuse of wastewater, the effluent generation was addressed. *Evidence:* ▪ Verbal Confirmation ▪ Onsite Observation	None
1.21.2	Effluent handling and storage facilities must be appropriately lined and bunded to ensure that spillages are contained	C	All storage and effluent handling facilities were lined and bunded. The EPU 5 facility was designed and constructed within a bunded area. Any spill will be contained within the bunded area should this occur. *Evidence:* ▪ Onsite Observation	None.
1.22. Air Quality				
1.22.2	Air quality monitoring must be initiated to verify the emissions from the process at the start of commissioning, as part of Sasol overall air quality monitoring.	C	Air quality monitoring to verify emissions was conducted for the EPU 5 facility. Sasol conducts annual compliance monitoring and completes compliance reports for its Wax & Solvents plants, AEL Licence number FDDM-MET-2013-20-R1, in accordance with the requirements set forth in its Atmospheric Emission Licences and Section 17 of the Minimum Emission Standards. The last compliance monitoring and report was completed in August 2022. *Evidence*: ▪ Sasolburg and Ekandustria Operations Annual Emission Report (AEL Reference no: FDDM-MET-2013-20-R1.) dated 29 August 2022	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
			▪ Verbal confirmation	
1.23. Waste management				
1.23.1	All building rubbles will be used, where possible, in construction. Where this is not possible, the rubble will be disposed of at an appropriate site.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None.
1.23.2	All contractors and employees handling hazardous materials will be provided with the appropriate Personal Protection Equipment (PPE).	**C**	The Auditor reviewed the PPE register and confirmed that all Sasol personnel were provided with necessary PPE. The PPE issued by Sasol was able to handle hazardous materials. Sasol does not allow access to contractors and service providers to the plant unless they wear the required PPE to handle hazardous materials. *Evidence*: ▪ PPE Register ▪ Onsite Observation ▪ Verbal confirmation	None.
1.23.3	The spent caustic solution can be sent via pipeline to other business units in Sasolburg Operations or be handled by a third party. The pipeline system carrying the spent caustic solution must be maintained on a regular basis.	**C**	Spent caustic was sent to SO effluent plant for treatment. Sasol personnel confirmed that physical maintenance of pipes constructed underground were not easy to maintain. Site wide inspections and checks on pipelines and boreholes were conducted every 6 months. Groundwater sampling was conducted every 6 months to inspect the groundwater quality. The Auditor reviewed the piping inspection plan for EPU5 facility – this register covered all pipes in the EPU5 facility. Pipe system number and maintenance schedule for the caustic system were available on the Sasol internal SAP system – this	None

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
			maintenance plan consists of a plan date, scheduled date, maintenance description (pipe), with an order number. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018 ▪ Wax, Chemical and Solvents waste inventory and register	
1.23.4	All redundant piping must be decontaminated prior to selling to a redundant metal recycler.	C	Redundant material or material replaced during maintenance of the EPU 5 facility was contained within designated skip bins until these were collected by a 3rd party hazardous waste service provider for treatment and disposal. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018 ▪ Wax, Chemical and Solvents waste inventory and register	None.
1.24. Noise				
1.24.1	All operations will meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993)	C	Sasol personnel confirmed that all operations meet noise standard requirements. Staff were required to wear required noise protection PPE when work was conducted in a noisy environment. *Evidence*: ▪ Noise Survey and Impact Assessment for Hearing Conservation Purposes (Reference no: SO-152-2020-TM-N) dated 16 March 2021	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
1.25. Dust generation				
1.25.1	The construction area must be watered down to suppress dust emissions	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None.
Site Closure and Decommissioning				
1.26 Rehabilitation				
1.26.1	Before decommissioning of the development becomes evident, a rehabilitation plan must be compiled and should be approved by this Department.	**N/A**	Noted. This condition was not audited as Sasol does not plan to decommission the EPU5 Facility.	None.
1.27 General				
1.27.1	A copy of this authorisation must be kept at the property where the activity will be carried on. The authorisation must be produced to any authorised official of the Department who requests to see it and must be made available for inspection by any employee or agent of the holder of the authorisation who works or undertakes work at the property.	**C**	The Auditor identified that a copy of the authorisation was in place at senior managers office and on Sasol SAP (intranet). *Evidence*: ▪ Onsite Observation	None.
1.27.2	Where any of the applicant's contact details change, including the name of the responsible person, the physical address and/or telephonic details, the applicant must notify the Department as soon as the new details become known to the applicant.	**C**	The Department was notified about the change in the applicant's details - this was amended to Mr Rightwell Laxa. *Evidence*: ▪ Application for Amendment of an EA (Reference no: EMS/1(e)08/32) dated 18 September 2019.	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
1.27.3	The holder of the authorisation must notify the Department, in writing, within 7 (seven) days if a condition of this authorisation is not adhered to. Any notification in terms of this condition must be accompanied by reasons for the non-compliance.	**N/A**	Noted.	None.
1.27.4	The applicant is responsible for compliance with the provisions for Duty-of-care and remediation of damage contained in Section 28 of the National Environmental Management Act, 1998	**N/A**	Noted. Mr Rightwell Laxa is the applicant responsible for compliance with provisions for Duty-of-Care and remediation of damage contained in Section 28 of the National Environmental Management Act, 1998.	None.
Annexure 1: Reasons for Decision				
4.a	Effluent generated must be recycled and re-used.	**C**	The effluent generated was treated, recycled and then reused. Caustic effluent is recycled and reused to neutralise water at the treatment plant (pH adjustment). The CO_2 and hydrocarbons that might be trapped are scrubbed and sent to Section 4600 for further treatment. Contaminated stormwater and wash down water or fire water were designed to be collected within the facility bund and channels and directed to the bioworks treatment facility. Clean stormwater does not enter the facility bund and is directed to the clean stormwater channels designed and in place on site. *Evidence:* ▪ Verbal Confirmation ▪ Onsite Observation	
4.b	Air quality monitoring must be initiated.	**C**	Air quality monitoring to verify emissions was conducted for the EPU 5 facility. Sasol conducts annual compliance monitoring and completes compliance reports for its Wax & Solvents plants, AEL Licence number FDDM-MET-2013-20-R1, in accordance with the requirements set forth in its Atmospheric Emission Licences and Section 17 of the Minimum Emission Standards. The last compliance monitoring and report was completed in August 2022.	None.

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person
			Evidence: ▪ Sasolburg and Ekandustria Operations Annual Emission Report (AEL Reference no: FDDM-MET-2013-20-R1.) dated 29 August 2022 ▪ Verbal confirmation	
4.c	Local contractors and suppliers must have the opportunity to supply services for the construction activities	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None.
4.d	The access road already exists.	**C**	The Auditor observed that the existing access road to the site was the road that was currently used. An access-controlled gate and a permit was required to access the Sasol One site and the EPU5 Facility. *Evidence:* ▪ Onsite Observation	None.

4.2 ENVIRONMENTAL MANAGEMENT PROGRAMME

Table 4-2 below provides the compliance of Sasol with the conditions within the EMPr that were included in the Environmental Impact Assessment Scoping Report for the EPU 5 Facility at the Monomers Division within the Sasol One Complex in Sasolburg, dated 23 October 2013.

Table 4-2 - Environmental Management Programme: Audit Findings

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
1.1.1 Soil, Land and Capability								
1.	All construction activities are to be undertaken from the designated contractor laydown area and materials storage areas.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None.	N/A	N/A	N/A	N/A
2.	The contractor laydown area should be hard standing in the form of compacted gravel and ensure pollution prevention measures are implemented, such as bunded storage areas for hazardous chemicals and materials.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None.	N/A	N/A	N/A	N/A
3.	The contractor laydown area should be removed upon completion of the construction activities and	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
	rehabilitated to its pre-construction status.		operational phase, therefore it was not audited.					
4.	All operational activities are to be undertaken from the designated project building and materials storage areas.	C	The Auditor confirmed that the operational activities were undertaken in the designated project building and materials storage areas as detailed in the project description and location of the EA. *Evidence*: ▪ Onsite observation ▪ EA and amendment (reference number: EMS/1(e)/08/32)	None.	N/A	N/A	N/A	N/A
5.	The necessary containment facilities, such as bunded areas must be well maintained in order to ensure integrity.	C	The Auditor observed and confirmed that all containment facilities were well maintained by Sasol. A maintenance schedule, and inspection registers and checklists were in place for the EPU 5 facility. *Evidence*: ▪ Onsite Observation ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018 ▪ Sasol SAP Piping Inspection Plan (PIP) for EPU5:	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			Maintenance Scheduling Overview List (29 March 2023);					
6.	The pipeline system carrying the spent caustic solution must be maintained on a regular basis.	C	Sasol personnel confirmed that physical maintenance of pipes constructed underground were not easy to maintain. Site wide inspections and checks on pipelines and boreholes were conducted every 6 months. Groundwater sampling was conducted every 6 months to inspect the groundwater quality. The Auditor reviewed the piping inspection plan for EPU5 facility – this register covered all pipes in the EPU5 facility. Pipe system number and maintenance schedule for the caustic system were available on the Sasol internal SAP system – this maintenance plan consists of a plan date, scheduled date, maintenance description (pipe), with an order number. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018 ▪ Sasol SAP Piping Inspection Plan (PIP) for EPU5: Maintenance Scheduling Overview List (29 March 2023); ▪ Wax, Chemical and Solvents waste inventory and register					
7.	Ensure that the repair operation requirements for the pipelines from the EPU5 Facility to the Chlorine Plant are monitored and maintained, in order to ensure optimum performance.	C	Sasol personnel confirmed that physical maintenance of pipes were maintained and site wide inspections and checks on pipelines and boreholes were conducted every 6 months. Groundwater sampling was conducted every 6 months to inspect the groundwater quality. The Auditor reviewed the piping inspection plan for EPU5 facility – this register covered all pipes in the EPU5 facility. Pipe system number and maintenance schedule for the caustic system to the chlorine plant were available on the Sasol internal SAP system – this maintenance plan consists of a plan date, scheduled date,	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			maintenance description (pipe), with an order number. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018 ▪ Sasol SAP Piping Inspection Plan (PIP) for EPU5: Maintenance Scheduling Overview List (29 March 2023); ▪ Wax, Chemical and Solvents waste inventory and register					
8.	All incidents and spillages must be cleaned up, the area rehabilitated, and the incident closed out in accordance with the Emergency Response and Preparedness procedure.	C	Sasol personnel confirmed that no spillages have been recorded. An incident regarding black smoke at Monomers from a flare was reported and was caused by lack of steam supplied to the flare resulting in incomplete combustion of vapours. The lack of steam to the flare was due to a power failure from damaged Eskom infrastructure. Sasol has a UPS for the plant, but because the Eskom pylon was damaged	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			for a long period, this drained the back-up energy supply and the plant was shut down. This resulted in more gases (vapours) sent to the flare. No corrective action was required from Sasol as the root cause was due to the damage of the pylon and not Sasol operations. Sasol could not assist in any manner as Eskom staff were responsible for the repair of the pylon. A Level 1 interval emergency and a level 1 exercise were done every 3 months. Yearly, level 1, 2, and 3 emergency exercises known as 'Credible Scenarios' were acted out and implemented as emergency drills. During the exercise, the control centre was mobilised and the fire department and ambulance was called to site. A description of the level of emergency is provided below. Level 1 – site plant Level 2 – plant wide Level 3 – including community					

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			An emergency preparedness and response plan was developed and kept on file in the admin office at the EPU5 for each emergency. Staff received training on this. *Evidence*: ▪ Credible Scenarios: July 2022 – June 2023, Phenolics South ▪ Emergency preparedness and response plans ▪ ISO 45001 recertification audit for the Sasol and Ekandustria Operations (reference no.: 352348) (November 2021) ▪ Verbal Confirmation					
9.	Industrial waste skips must be correctly labelled and placed with the correct signage.	C	The Auditor identified that there was a designated area for waste skips that were correctly labelled. Waste skips were available for different waste types generated at the EPU 5 facility. *Evidence:* ▪ Onsite Observation	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
10.	The storage area for industrial waste/material must be within a designated and bunded area, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.	C	The Auditor observed all hazardous materials and chemicals at EPU5 Facility were stored in a designated and bunded area. Sasol personnel confirmed that the bunded area was able to contain 110% volume of the largest container stored on site. Dedicated skips were provided for the storage of hazardous waste until collection and disposal by a 3rd party service provider. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation ▪ Waste manifests and register.	None.	N/A	N/A	N/A	N/A
11.	The industrial waste/material storage area should be covered and labelled.	C	The designated area for waste skips were correctly labelled and covered. Skips were able to close. *Evidence:* ▪ Onsite Observation	None.	N/A	N/A	N/A	N/A
12.	Industrial waste must be collected and disposed of at an appropriate waste disposal facility.	C	The Auditor reviewed waste registers and manifests during the audit site visit regarding	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			waste collection and management for the EPU5 facility. The wase was collected and adequately disposed of by a 3rd party service provider. *Evidence*: ▪ EnviroServ Waste Manifest ▪ Waste inventory and register ▪ Onsite Observation ▪ Verbal Confirmation					
13.	Records of all waste being taken off site must be recorded and kept as evidence	C	Sasol has all waste manifests and records kept onsite and readily available for review. *Evidence*: ▪ Onsite Observation	None.	N/A	N/A	N/A	N/A
14.	All surface run-off from EPU5 Facility will go to the Oily Water System (OWS), except for caustic and methanol slop which will be contained and then discharged (to OWS or elsewhere) under controlled conditions.	C	All surface water run-off from EPU5 Facility goes to the Oily Water Sewer system (OWS), except for caustic effluent which is contained and then discharged to the OWS under controlled conditions. Spent caustic was stripped of hydrocarbons inside the plant. The purified stream was sent to the existing Chlorine Plant at the	OFI. Condition to be amended as per the EA amended condition 1.20.2.	N/A	N/A	Administrative.	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			Sasol Midlands Site as a process chemical. Clean (uncontaminated) surface water run-off from the EPU 5 facility process areas, and immediate surrounding area such as roads was routed to the storm water channel and system. *Evidence*: ▪ Verbal Confirmation ▪ Ethylene Purification Unit (EPU5) Facility Environmental Impact Assessment (EIA): Scoping Report (Reference no: 1768ES) dated July 2008					
15.	The OWS must be continuously monitored and maintained in order to ensure optimum performance.	C	The OWS is regularly monitored by designated staff and maintenance inspections were conducted. Inspection and maintenance reports were available on the Sasol internal System Analysis Program (SAP) and Plant Condition Management System (PCMS) system. No maintenance was required on the OWS during the audit period. *Evidence*:	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ Piping Inspection Plan (PIP) for EPU5 ▪ Inspection and maintenance records from SAP ▪ Maintenance register ▪ Verbal confirmation					
16.	An OWS Maintenance Procedure must be implemented.	**N/A**	The OWS maintenance procedure was in place; however, no maintenance was required during the audit period. *Evidence*: ▪ Piping Inspection Plan (PIP) for EPU5 ▪ Inspection and maintenance records from SAP ▪ Maintenance register ▪ Verbal confirmation	None.	N/A	N/A	N/A	N/A
17.	Chemical and hazardous material handling Procedure	**C**	The chemical and hazardous material handling procedure was in place. The procedures were aligned with the SDS for each hazardous material. *Evidence*: ▪ Procedure for the management of waste on the Sasolburg Operation Sites (reference SSP-S-014)	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ Inspection and maintenance records from SAP dated 27 March 2023 ▪ Verbal confirmation ▪ SDS for chemicals used on site in place					
18.	A Material Safety Datasheet (MSDS) should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.	**C**	The Auditor observed that all chemicals and hazardous materials stored on EPU5 site have SDS attached to the containers sealed in a plastic sleeve. SDS for chemicals used were available electronically was well. *Evidence:* ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
19.	The closure and rehabilitation of this facility must be planned in advance of decommissioning and closure and be undertaken in accordance with the rehabilitation and closure plans of the Sasol One Complex.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the decommissioning and rehabilitation phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
20.	Rehabilitation and closure planning must ensure the protection and rehabilitation of soil and land use	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the decommissioning and	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
	resources both within the Sasol One Complex and the surrounding area.		rehabilitation phase and not the operational phase, therefore it was not audited.					
1.1.2 Flora and Fauna								
1.	Weeds, alien and invasive vegetation must be removed should ingress occur.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
2.	No open fires are permitted on site or within the whole of the Sasol One Complex.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
3.	The closure and rehabilitation of this facility must be planned in advance of decommissioning and closure and be undertaken in accordance with the rehabilitation and closure plans of the Sasol One Complex.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
4.	Rehabilitation and closure planning must ensure the protection and rehabilitation of flora and fauna within the surrounding area.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			operational phase, therefore it was not audited.					
1.1.3 Surface Water								
1.	All construction activities are to be undertaken from a designated Contractor Laydown area, which must be clearly demarcated in the Sasol One footprint.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
2.	All surface run-off from EPU5 Facility will go to the OWS, except for caustic and methanol slop which will be contained and then discharged (to OWS or elsewhere) under controlled conditions	**C**	All surface run-off from EPU5 Facility goes to the Oily Water Sewer system (OWS), except for caustic slop which is contained within a bund and then discharged (to OWS) under controlled conditions. The OWS leads to the API which is a dirty water dam system designed to separate oil or suspended solids from wastewater discharged by various units at the Sasol One Complex. Spent caustic was stripped with nitrogen to reduce the hydrocarbons below a specified level before being reused in the scrubber. The purified caustic stream was sent to the existing	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			Chlorine Plant at the Sasol Midlands Site as a process chemical. Methanol was contained in a drum at the EPU5 facility. Clean surface run-off from the process areas, as well as areas outside the process areas such as roads where contamination with oil, heavy hydrocarbons or chemicals can safely be excluded, will be routed to storm water, as it is clean. *Evidence*: ▪ Verbal Confirmation ▪ Ethylene Purification Unit (EPU5) Facility Environmental Impact Assessment (EIA): Scoping Report (Reference no: 1768ES) dated July 2008					
3.	The OWS must be continuously monitored and maintained in order to ensure optimum performance.	C	The OWS is regularly monitored by designated staff and maintenance inspections were conducted. Inspection and maintenance reports were available on the Sasol internal System Analysis Program (SAP) and Plant Condition Management System (PCMS)	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			system. No maintenance was required on the OWS during the audit period. *Evidence*: ▪ Piping Inspection Plan (PIP) for EPU5 ▪ Inspection and maintenance records from SAP ▪ Maintenance register ▪ Verbal confirmation					
4.	An OWS Maintenance Procedure must be implemented.	**N/A**	The OWS maintenance procedure was in place; however, no maintenance was required during the audit period. *Evidence*: ▪ Piping Inspection Plan (PIP) for EPU5 ▪ Inspection and maintenance records from SAP ▪ Maintenance register ▪ Verbal confirmation	None	N/A	N/A	N/A	N/A
5.	All chemicals and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to	**C**	All hazardous material and chemicals at EPU5 Facility were stored in a designated and bunded area. Sasol personnel confirmed that the bunded area could contain 110% of the	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
	contain 110% volume of the largest container stored		stored volume of the largest container stored at the site. *Evidence*: ▪ Onsite Observation ▪ Verbal Confirmation					
6.	MSDS should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.	C	The Auditor observed that all chemicals and hazardous materials stored on EPU5 site have SDS attached to the containers sealed in a plastic sleeve. SDS for chemicals used were available electronically was well. *Evidence:* ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
7.	Emergency Preparedness and Response Procedures must be provided should an incident or the spillage of hazardous chemicals occur.	C	An emergency preparedness and response plan was kept on file in the admin office at the EPU5 facility for each emergency. Staff received training on this emergency preparedness and response plan. *Evidence*: ▪ Onsite Observation	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
8.	Industrial waste disposal bins will be made available for disposal of all industrial waste to contractors and employees.	C	Industrial waste disposal bins and skips were available on site for general and hazardous waste. Waste registers and manifests were available on site for review. Waste was collected, treated and disposed of by a third-party waste service provider. *Evidence*: ▪ EnviroServ and Averda Waste Manifest ▪ Waste inventory and Register ▪ Onsite Observation ▪ Verbal Confirmation	None	N/A	N/A	N/A	N/A
9.	Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately at an approved waste disposal facility, or recycled where possible	C	Waste at Sasol was managed by a third-party waste service provider. Once the waste skips were full, Sasol loads a notification for the waste service provider to collect the waste and adequality treat and/or dispose of waste. Sasol personnel confirmed that waste does not stay onsite over 90 days. *Evidence*: ▪ EnviroServ and Averda Waste Manifest	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ Waste inventory and Register ▪ Onsite Observation ▪ Verbal Confirmation					
10.	Records of all waste being taken off site must be recorded and kept as evidence, as well as evidence of correct disposal must be kept	C	Waste register and waste manifests were available on site for review. Waste developed during plant maintenance for parts that were replaced and repaired was contained, collected by a hazardous waste service provider and adequately disposed of. *Evidence*: ▪ EnviroServ and Averda Waste Manifests ▪ Waste inventory and Register ▪ Onsite Observation ▪ Verbal Confirmation	None	N/A	N/A	N/A	N/A
11.	Continue to monitor, record and evaluate water consumption	C	The water consumption and quality is monitored by the operations staff. Water consumption is measured daily through flow meters and the plant DCS, and the quality is	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			measured by staff through sampling and laboratory analysis. *Evidence*: ▪ Onsite Observation of DCS ▪ Verbal Confirmation					
12.	Implement water saving practices through existing environmental management systems.	C	Sasol personnel confirmed that water saving practices were in place as the spent water was sent to the API sewers, and eventually the bioworks for reuse. *Evidence*: ▪ Verbal Confirmation ▪ Onsite observation	None	N/A	N/A	N/A	N/A
1.1.4 Groundwater								
1.	All construction activities are to be undertaken from a designated contractor laydown area, which is clearly demarcated in the Sasol One footprint.	N/A	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
2.	All surface runoff from EPU5 Facility will go to the OWS, except for caustic and methanol slop which will be contained and then discharged (to	C	All surface run-off from EPU5 Facility goes to the Oily Water Sewer system (OWS), except for caustic slop which is	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
	OWS or elsewhere) under controlled conditions and thus will not seep or contaminate the groundwater.		contained within a bund and then discharged (to OWS) under controlled conditions. The OWS leads to the API which is a dirty water dam system designed to separate oil or suspended solids from wastewater discharged by various units at the Sasol One Complex. Spent caustic was stripped with nitrogen to reduce the hydrocarbons below a specified level before being reused in the scrubber. The purified caustic stream was sent to the existing Chlorine Plant at the Sasol Midlands Site as a process chemical. Methanol storage drum was placed within a bund with a sump to contain any spills. Uncontaminated stormwater is channelled to the clean stormwater sewer system. Clean surface run-off from the process areas, as well as areas outside the process areas such as roads where contamination with oil, heavy hydrocarbons or chemicals can safely be excluded, will be routed to storm water, as it is clean.					

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			Evidence: ▪ Verbal Confirmation ▪ Ethylene Purification Unit (EPU5) Facility Environmental Impact Assessment (EIA): Scoping Report (Reference no: 1768ES) dated July 2008					
3.	The OWS must be continuously monitored and maintained in order to ensure optimum performance.	C	Sasol personnel confirmed that physical maintenance of pipes constructed underground were not easy to maintain. Site wide inspections were conducted on all pipes and boreholes, and groundwater sampling was conducted every 6 months. The boreholes across the Sasol One site were monitored every 6 months. The Auditor reviewed the piping inspection plan for EPU5 facility; this register covers all pipes within the EPU5 facility. Pipe system number and maintenance schedule for the caustic system were available on the Sasol internal SAP system – this maintenance plan consists of a plan date, scheduled date, maintenance	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			description (pipe), with an order number. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018					
4.	An OWS Maintenance Procedure must be implemented.	**N/A**	The OWS maintenance procedure was in place; however, no maintenance was required during the audit period. *Evidence*: ▪ Piping Inspection Plan (PIP) for EPU5 ▪ Inspection and maintenance records from SAP ▪ Maintenance register ▪ Verbal confirmation					
5.	All chemicals and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored	**C**	All hazardous material and chemicals at EPU5 Facility were stored in a designated and bunded area. Sasol personnel confirmed that the bunded area could contain 110% of the stored volume of the largest container stored at the site.					

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			Evidence: ▪ Onsite Observation ▪ Verbal Confirmation					
6.	MSDS should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.	C	The Auditor observed that all chemicals and hazardous materials stored on EPU5 site have SDS attached to the containers sealed in a plastic sleeve. SDS for chemicals used were available electronically was well. *Evidence:* ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
7.	Emergency Preparedness and Response Procedures must be provided should an incident or the spillage of hazardous chemicals occur	C	Emergency preparedness plan kept on file in the admin office at the EPU5 for each emergency. Staff received training on Emergency Preparedness and Response Procedures. *Evidence*: ▪ Onsite Observation	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
8.	Ensure that the proposed buildings are fully contained.	C	All buildings at the on Sasol One Complex are fully contained. *Evidence*: ▪ Onsite Observation ▪ Verbal confirmation	None	N/A	N/A	N/A	N/A
9.	Ensure that any storage facilities are appropriately lined	C	All material and storage facilities at the EPU 5 facility were appropriately lined and bunded. *Evidence*: ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
10.	The closure and rehabilitation of this facility must be planned in advance of decommissioning and closure and be undertaken in accordance with the rehabilitation and closure plans of Sasol One Complex	N/A	Noted. This condition is outside the audit period and refers to a requirement during the decommissioning and rehabilitation phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
11.	Rehabilitation and closure planning must include and ensure the protection of groundwater resources.	N/A	Noted. This condition is outside the audit period and refers to a requirement during the decommissioning and rehabilitation phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
1.1.5 Effluent Generation								

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
1.	The effluent generation will be addressed through the treatment, re-cycling and re-use of effluent.	C	Caustic effluent is recycled and reused to neutralise water at the treatment plant (pH adjustment). The CO_2 and hydrocarbons that might be trapped in the caustic effluent are scrubbed and sent to Section 4600 for further treatment. Through the treatment, recycling, or reuse of wastewater, the effluent generation was addressed. *Evidence:* ▪ Verbal Confirmation ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
2.	All effluent handling is to be undertaken in accordance with Standard Operating Procedures and the associated Material Safety Datasheet for the hazard material (where applicable). This needs to take cognisance of storage, handling, transportation and disposal of any effluent.	C	Effluent handling was detailed in the procedures for the management of waste on the Sasolburg. These procedures include the conditions within the SDS for effluent where applicable. Sasol One is ISO 14001 certified and handles effluent and waste according to their Environmental Management System. This includes the purchasing, transportation and storage of raw materials, manufacturing, storage, distribution, transport and sales of polymers,	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			chemicals, explosives and wax related products supported by utilities and services. *Evidence*: ▪ Sasol Sasolburg & Ekandustria Operations ISO14001 Certificate issued by DQS (Reference no : 40600394 UM15) dated 01 January 2022; ▪ Procedure for the management of waste on the Sasolburg Operations' Sites (document number: SSP-S-014) (Sasolburg Operations, January 2020)					
3.	Effluent handling and storage facilities must be appropriately lined and bunded to ensure that spillages are contained.	C	All storage and effluent handling facilities were lined and bunded. The EPU 5 facility was designed and constructed within a bunded area. Any spill will be contained within the bunded area should this occur. *Evidence:* ▪ Onsite Observation	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
4.	Emergency Preparedness and Response Procedures must be provided should an incident or the spillage of hazardous chemicals occur.	C	Emergency preparedness plan kept on file in the admin office at the EPU5 for each emergency. Staff received training on Emergency Preparedness and Response Procedures. *Evidence*: ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
1.1.6 Air Quality								
1.	Appropriate dust suppression measures must be applied at the construction site to ensure minimal dust entrainment.	N/A	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.					
2.	Sources of emission associated with the Operational Phase include nitrogen, vent air and fugitive emissions to atmosphere which is non-hazardous and it is not released on a continual basis unless during tank filling. These units should be operated in accordance with their design specification and all maintenance and repair operation requirements must be maintained in order to ensure optimum performance	C	Sasol personnel confirmed that all EPU5 operations were in accordance with design specifications and maintained accordingly. In addition, the EPU 5 facility was maintained and emissions were monitored to ensure compliance of the AEL. *Evidence*: ▪ Verbal Confirmation ▪ Design Plan	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
	and minimal emissions during tank filling.		▪ Maintenance Register ▪ Sasolburg and Ekandustria Operations Annual Emission Report (Reference no: FDDM-MET-2013-20-R1.) dated 29 August 2022					
3.	Flare gas will combust to clean CO_2 and water vapour. All maintenance and repair operation requirements must be undertaken in order to ensure optimum performance	C	The vent air was non-hazardous and not released on a continuous basis unless during tank filling. Flare gas will combust to clean CO_2 and water vapour. The by-product of the EPU5 facility, ethane gas, is routed to the existing plant adjacent to EPU5, where it is cracked to ethylene. Pipe system number and maintenance schedule for the EPU5 Facility were available on the Sasol internal SAP system – this maintenance plan consists of a plan date, scheduled date, maintenance description (pipe), with an order number. *Evidence*: ▪ Ethylene Purification Unit (EPU5) Facility Environmental Impact Assessment (EIA): Scoping	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			Report (Reference no: 1768ES) dated July 2008 ▪ Verbal Communication ▪ Sasolburg and Ekandustria Operations Annual Emission Report (Reference no: FDDM-MET-2013-20-R1.) dated 29 August 2022 ▪ Maintenance schedule ▪ SAP inspection and maintenance records					
4.	Air quality monitoring and modelling must be initiated for this facility to verify the emissions from the process at the start of commissioning, as part of Sasol's overall air quality monitoring.	C	Air quality monitoring to verify emissions was conducted for the EPU 5 facility. Sasol conducts annual compliance monitoring and completes compliance reports for its Wax & Solvents plants, AEL Licence number FDDM-MET-2013-20-R1, in accordance with the requirements set forth in its Atmospheric Emission Licences and Section 17 of the Minimum Emission Standards. The last compliance monitoring and report was completed in August 2022. *Evidence*: ▪ Sasol Sasolburg Operations' Gas Loop, Utilities and Chemicals, Air Emissions	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			Licence (AEL) (reference number: FDDM-MET-2013-23-P3) (November 2019); ▪ Sasolburg and Ekandustria Operations Annual Emission Report (AEL Reference no: FDDM-MET-2013-20-R1.) dated 29 August 2022 ▪ Verbal confirmation					
5.	Rehabilitation and closure planning must ensure the protection and rehabilitation of air quality resources both within the Sasol One Complex and the surrounding area	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the decommissioning and rehabilitation phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
1.1.7 Noise								
1.	A complaints register must be made available at all security gates and should any complaints be received, these must be logged in the complaints register and reported to the responsible person on site. All complaints must be closed out within 14 days.	**C**	All complaints and incident registers are kept on a SAP system. An incident relating the EPU5 was recorded on the 26/09/2022 and referred to the release of C_3 hydrocarbons on a pipeline supplying Natref from Section 4600. The release was as a result of a crack on the inlet stub on a pressure safety RV. The crack in the inlet stub was	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			repaired, however the cause of the crack could not be determined. *Evidence*: ▪ Incidence and complaints register (Reference no: FY23 5213) dated 26 September 2022					
2.	All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993).	C	Sasol personnel confirmed that all operations meet noise standard requirements. Staff were required to wear required PPE (ear plugs and muffs) when working at the EPU 5 facility. *Evidence*: ▪ Noise Survey and Impact Assessment for Hearing Conservation Purposes (Reference no: SO-152-2020-TM-N) dated 16 March 2021	None.	N/A	N/A	N/A	N/A
1.1.8 Waste								
1.	General waste disposal bins will be made available for disposal of all general waste to contractors and employees.	C	General waste bins were readily available for use for employees and contractors on site. *Evidence*:	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ Onsite Observation					
2.	General waste disposal bins must be correctly labelled.	C	All waste bins and skips were correctly labelled. *Evidence:* ▪ Onsite Observation	None.	N/A	N/A	N/A	N/A
3.	Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately at an approved waste disposal facility	C	Waste at Sasol was managed by a third-party waste service provider. Once the waste skips were full, Sasol loads a notification for the waste service provider to collect the waste and adequality treat and/or dispose of waste. Sasol personnel confirmed that waste does not stay onsite over 90 days. *Evidence*: EnviroServ and Averda Waste Manifest Waste inventory and Register Onsite Observation ▪ Verbal Confirmation	None.	N/A	N/A	N/A	N/A
4.	Records of all waste being taken off site must be recorded and kept as evidence	C	Sasol keeps record of all waste disposal and treatment by maintaining all waste manifests and maintaining a waste	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			disposal register. Waste manifests and the register were readily available for review. *Evidence*: ▪ Onsite Observation ▪ Waste manifests and waste management register					
5.	Building rubble will be used, where possible, in construction. Where this is not possible, the rubble will be disposed of at an appropriate site.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.					
6.	Industrial waste disposal bins will be made available for disposal of all industrial waste to all contractors and employees.	**C**	Industrial waste disposal bins and skips were available on site for general and hazardous waste. Waste registers and manifests were available on site for review. Waste was collected, treated and disposed of by a third-party waste service provider. *Evidence*: EnviroServ and Averda Waste Manifest Waste inventory and Register Onsite Observation	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ Verbal Confirmation					
7.	General industrial waste skips must be correctly labelled and placed with the correct signage	C	The Auditor identified that there was a designated area for waste skips that were correctly labelled. Waste skips were available for different waste types generated at the EPU 5 facility. *Evidence:* ▪ Onsite Observation	None.	N/A	N/A	N/A	N/A
8.	A waste management procedure must be implemented.	C	Waste management procedure were effectively implemented on Sasol One site. Evidence: ▪ Procedure for the management of waste on the Sasolburg Operations' Sites (document number: SSP-S-014) (Sasolburg Operations, January 2020); ▪ Waste manifest and disposal records; and ▪ Waste inventory.	None.	N/A	N/A	N/A	N/A
9.	Waste will be temporarily stored on site (less than 90 days) before being	C	Waste at Sasol was managed by a third-party waste service provider. Once the waste skips	None.	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
	disposed of appropriately at an approved waste disposal facility		were full, Sasol loads a notification for the waste service provider to collect the waste and adequality treat and/or dispose of waste. Sasol personnel confirmed that waste does not stay onsite over 90 days. *Evidence*: ▪ EnviroServ and Averda Waste Manifest ▪ Waste inventory and Register ▪ Onsite Observation ▪ Verbal Confirmation					
10.	Records of all waste being taken off site must be recorded and kept as evidence.	C	Sasol keeps record of all waste disposal and treatment by maintaining all waste manifests and maintaining a waste disposal register. Waste manifests and the register were readily available for review. *Evidence*: ▪ Onsite Observation ▪ Waste manifests and waste management register	None.	N/A	N/A	N/A	N/A
11.	Hazardous materials will be generated if there are spillages. This waste should be cleaned up using	C	Spill kits were readily available onsite should a spillage incident occur. However, no spillage	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
	absorbent material provided in spill kits on site.		incidents were recorded for EPU5 during the audit period. *Evidence*: ▪ Onsite Observation ▪ Verbal Confirmation ▪ Incidents register					
12.	Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin.	C	There are three different skips on the EPU5 site and one of them was designated for hazardous waste to ensure separation of hazardous waste. No spillage incidents were recorded for EPU5 during the audit period. *Evidence*: ▪ Onsite Observation ▪ Verbal Confirmation	None	N/A	N/A	N/A	N/A
13.	The storage area for hazardous material must be in an area that takes cognisance of chemical compatibility and is in a designated and bunded area, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.	C	All hazardous and chemical materials at EPU5 Facility were stored in a designated and bunded area. Sasol personnel confirmed that the bunded area could contain 110% volume of the largest container stored at the EPU5 facility. *Evidence:* ▪ Onsite Observation	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ Verbal Confirmation					
14.	The hazardous waste storage area should be covered, labelled and well ventilated	C	The Auditor observed that all hazardous waste storage areas on the EPU 5 area was covered with canopies, labelled and well ventilated. In addition, the hazardous waste skips could be covered. *Evidence*: ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
15.	All contractors and employees will be provided with the appropriate Personal Protective Equipment (PPE) for handling hazardous materials	C	The Auditor reviewed the PPE register and confirmed that all Sasol personnel including all contractors and employees handling hazardous materials, were provided with necessary PPE. SSO policies and procedures requires that all contractors and service providers wear the correct PPE before allowed to enter the Sasol One Complex. *Evidence*:	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ PPE Register ▪ Onsite Observation					
16.	MSDS should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.	C	The Auditor observed that all chemicals and hazardous materials stored on EPU5 site have MSDS attached to the containers sealed in a plastic sleeve and were available electronically. *Evidence:* ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
1.1.9 Spillages and Incidents								
1.	All chemicals and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.	C	All hazardous material and chemicals at EPU5 Facility were stored in a designated and bunded area. Sasol personnel confirmed that the bunded area could contain 110% of the stored volume of the largest container stored at the site. *Evidence*: ▪ Onsite Observation ▪ Verbal Confirmation	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
2.	MSDS should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials	C	The Auditor observed that all chemicals and hazardous materials stored on EPU5 site have MSDS attached to the containers sealed in a plastic sleeve and were available electronically. *Evidence:* ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
3.	Emergency Preparedness and Response Procedures must be provided should an incident or the spillage of hazardous chemicals occur.	C	An emergency preparedness and response plan was kept on file in the admin office at the EPU5 facility for each emergency. Staff received training on this emergency preparedness and response plan. *Evidence*: ▪ Onsite Observation	None	N/A	N/A	N/A	N/A
4.	All surface runoff from EPU5 Facility will go to the OWS, except for caustic and methanol slop which will be contained and then discharged (to OWS or elsewhere) under controlled conditions and thus will not seep or contaminate the groundwater.	C	All surface run-off from EPU5 Facility goes to the Oily Water Sewer system (OWS), except for caustic slop which is contained within a bund and then discharged (to OWS) under controlled conditions. The OWS leads to the API which is a dirty	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			water dam system designed to separate oil or suspended solids from wastewater discharged by various units at the Sasol One Complex. Spent caustic was stripped with nitrogen to reduce the hydrocarbons below a specified level before being reused in the scrubber. The purified caustic stream was sent to the existing Chlorine Plant at the Sasol Midlands Site as a process chemical. Clean surface run-off from the process areas, as well as areas outside the process areas such as roads where contamination with oil, heavy hydrocarbons or chemicals can safely be excluded, will be routed to storm water, as it is clean. *Evidence*: ▪ Verbal Confirmation ▪ Ethylene Purification Unit (EPU5) Facility Environmental Impact Assessment (EIA): Scoping Report (Reference no: 1768ES) dated July 2008					

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
5.	The OWS must be continuously monitored and maintained in order to ensure optimum performance.	**C**	The OWS is regularly monitored by designated staff and maintenance inspections were conducted. Inspection and maintenance reports were available on the Sasol internal System Analysis Program (SAP) and Plant Condition Management System (PCMS) system. No maintenance was required on the OWS during the audit period. *Evidence*: ▪ Scheduling overview list form: Maintenance Scheduling Overview List. ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018 ▪ Sasol SAP Piping Inspection Plan (PIP) for EPU5: Maintenance Scheduling Overview List (29 March 2023); ▪ Maintenance register ▪ Verbal confirmation	None	N/A	N/A	N/A	N/A
6.	An OWS Maintenance Procedure must be implemented.	**N/A**	The OWS maintenance procedure was in place;	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			however, no maintenance was required during the audit period. *Evidence*: ▪ Piping Inspection Plan (PIP) for EPU5 ▪ Inspection and maintenance records from SAP ▪ Maintenance register ▪ Verbal confirmation					
7.	All chemicals and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.	C	All hazardous material and chemicals at EPU5 Facility were stored in a designated and bunded area. Sasol personnel confirmed that the bunded area could contain 110% of the stored volume of the largest container stored at the site. *Evidence*: ▪ Onsite Observation ▪ Verbal Confirmation	None	N/A	N/A	N/A	N/A
1.1.10 General								
1.	The pipeline system carrying the spent caustic solution must be maintained on a regular basis.	C	Sasol personnel confirmed that physical maintenance of pipes constructed underground were not easy to maintain. Site wide inspections and checks on pipelines and boreholes were	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			conducted every 6 months. Groundwater sampling was conducted every 6 months to inspect the groundwater quality. The Auditor reviewed the piping inspection plan for EPU5 facility – this register covered all pipes in the EPU5 facility. Pipe system number and maintenance schedule for the caustic system were available on the Sasol internal SAP system – this maintenance plan consists of a plan date, scheduled date, maintenance description (pipe), with an order number. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018 ▪ Sasol SAP Piping Inspection Plan (PIP) for EPU5: Maintenance Scheduling Overview List (29 March 2023); ▪ Wax, Chemical and Solvents waste inventory and register					

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
2.	Ensure that the repair operation requirements from the EPU5 Facility to the Chlorine plant are monitored and maintained, in order to ensure optimum performance.	C	Sasol personnel confirmed that physical maintenance of pipes were maintained and site wide inspections and checks on pipelines and boreholes were conducted every 6 months. Groundwater sampling was conducted every 6 months to inspect the groundwater quality. The Auditor reviewed the piping inspection plan for EPU5 facility – this register covered all pipes in the EPU5 facility. Pipe system number and maintenance schedule for the caustic system to the chlorine plant were available on the Sasol internal SAP system – this maintenance plan consists of a plan date, scheduled date, maintenance description (pipe), with an order number. *Evidence:* ▪ Onsite Observation ▪ Verbal Confirmation ▪ Sasol Operations Piping Inspection Plan- Plant Register dated 25 October 2018 ▪ Sasol SAP Piping Inspection Plan (PIP) for EPU5:	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			▪ Maintenance Scheduling Overview List (29 March 2023); ▪ Wax, Chemical and Solvents waste inventory and register					
3.	All incidents and spillages must be cleaned up, the area rehabilitated and the incident closed out in accordance with the Emergency Response and Preparedness procedure.	C	No spillages were recorded or reported for the EPU 5 facility. Black smoke at Monomers from a flare was reported and was caused by lack of steam supplied to the flare resulting in incomplete combustion of vapours. The lack of steam to the flare was due to a power failure from damaged Eskom infrastructure. Sasol has a UPS for the plant, but because the Eskom pylon was damaged for a long period, this drained the back-up energy supply and the plant was shut down. This resulted in more gases (vapours) sent to the flare. No corrective action was required from Sasol as the root cause was due to the damage of the pylon and not Sasol operations. Sasol could not assist in any manner as Eskom staff were responsible for the repair of the pylon.	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
			Evidence: ▪ Onsite Observation ▪ Verbal Confirmation					
1.2 Social Economic Impacts								
1.2.1 Employment								
1.	Employment is to be undertaken in accordance with Sasol's employment policy.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
2.	Where possible, Sasol should involve the Sasolburg Unemployment Forum when the recruitment phase commences.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
3.	Where possible all skilled and unskilled labour as well as contractors must be sourced locally within the municipality	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A

Ref	Condition	Compliance Status	Findings	Recommendation, Timeframe & Responsible Person	Measures Implemented to Address Non-Compliance	Practicality of the EMPR Commitments	Is the Non-Compliance Administrative or will it have an impact	Historical/New Non-Compliance (Administrative measures)
4.	No recruitment at the construction site may be allowed.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
5.	Where possible, labour-intensive practices (as opposed to mechanised) must be practised.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
6.	Principles of equality, BEE, gender equality and non-discrimination must be implemented.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A
7.	The labour and recruitment policy must be developed, displayed and implemented by the Construction Phase contractor.	**N/A**	Noted. This condition is outside the audit period and refers to a requirement during the construction phase and not the operational phase, therefore it was not audited.	None	N/A	N/A	N/A	N/A

5 PROGRESS AGAINST PREVIOUS AUDIT FINDINGS

The previous compliance audit report against the consolidated EA and EMPr was compiled by the Northwest University CEM in 2018. A comparison in the change of compliance rating from the 2018 and 2023 audits are provided in **Figure 5-1** and **Table 5-1** below, and provides a summary of the audit findings for the previous and current audits (2018 and 2023). The 2023 EA and EMPr audit identified zero non-compliant conditions.

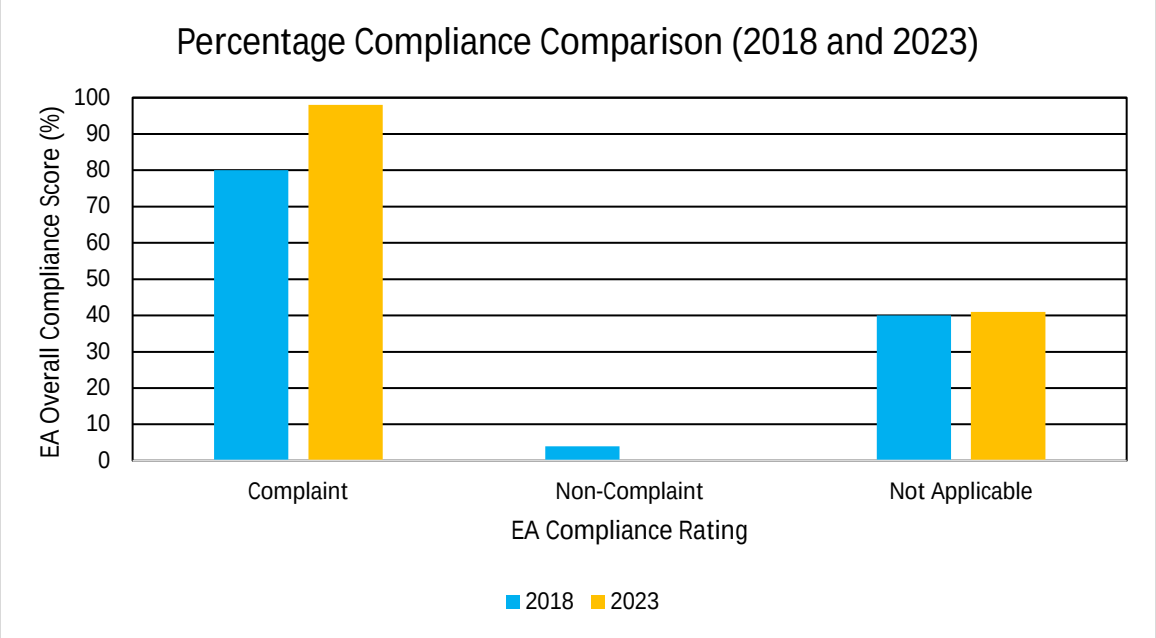

Figure 5-1 – Percentage comparison of Environmental Authorisation compliance levels from 2019 to 2022

Table 5-1 – Progress against previous findings

Ref	Commitment	2019 Status	2019 Finding	2023 Status	2023 Finding
EA Conditions					
5.Recording and Monitoring					
1.14	The holder of the authorisation must submit an environmental audit report to the department once during operation of the facility (B6) and once during decommissioning of the facility. The environmental audit report must:	NC	At the time of the audit, evidence was found that an internal audit had been conducted by a team of internal Sasol auditors on 22 - 25 May 2018. Although the findings of the audit was reported in an internal audit report (ROD Audit Report for Sasolburg Operations 22 - 25 May 2018 Rev0), no evidence could be found that an audit report on the compliance to the	C	CEM conducted an external environmental compliance audit in 2019 and completed an environmental audit report in 2019 with the required information. WSP included the required information in the environmental audit report for the environmental audit completed in 2023. *Evidence*

Ref	Commitment	2019 Status	2019 Finding	2023 Status	2023 Finding
	Containing the following: - Activity - Targets - Conformance / non-conformance - Performance indicator - Comments		conditions of this authorisation for the recommissioning of the boilers at Steam Station One has been submitted to the FS DESTEA during the operation thereof. This is a non-compliance to EA condition 1.14, which requires that the holder of the authorisation must submit an environmental audit report to the Department, once during operation of the facility (Recommissioning of the boilers at Steam Station One).		▪ External Audits of EAs/RoDs/EMPrs: Environmental Authorisation: G&U: Establishment of Ethylene Purification Unit (EPU) Facility Audit Report by Centre for Environmental Management (CEM) (Reference no: CEM 2018/141) dated November 2018
EMPr Conditions					
1.1.8 Waste					
10.	Records of all waste being taken off site must be recorded and kept as evidence.	NC	During the audit, no evidence could be found that records of the handling, storage and transfer of the spent caustic effluent is kept at present, as required by condition 1.21.3 of the Environmental Authorisation.	C	Sasol keeps record of all waste disposal and treatment by maintaining all waste manifests and maintaining a waste disposal register. Waste manifests and the register were readily available for review. *Evidence* ▪ Onsite Observation ▪ Waste manifests and waste management register

6 SUMMARY OF THE AUDIT FINDINGS

6.1 SASOL SASOLBURG EPU5 FACILITY EA

The audit findings have been summarised into the following categories: compliance, non-compliance and not applicable. The overall audit findings concerning compliance to the EA conditions are as listed in **Table 6-1** below.

Table 6-1 - Summary of EA Compliance Audit Findings

Section of the EA	No. Commitments	C	NC	N/A
Scope	6	3	0	3
Appeal of Authorisation	5	0	0	5
Management of Activity	4	2	0	2
Monitoring	2	1	0	1
Recording and Monitoring	3	3	0	0
Commissioning of the Activity	1	0	0	1
Construction and Operations	18	13	0	5
Site Closure and Decommissioning	9	5	0	4
Total	48	27	0	21
Total Percentage		56%	0%	44%
Percentage Compliance with Applicable Conditions	100%			

Figure 6-1 illustrates the number/count contribution of the findings of the EA conditions per section while **Figure 6-2** presents the total proportion of compliance for the EA.

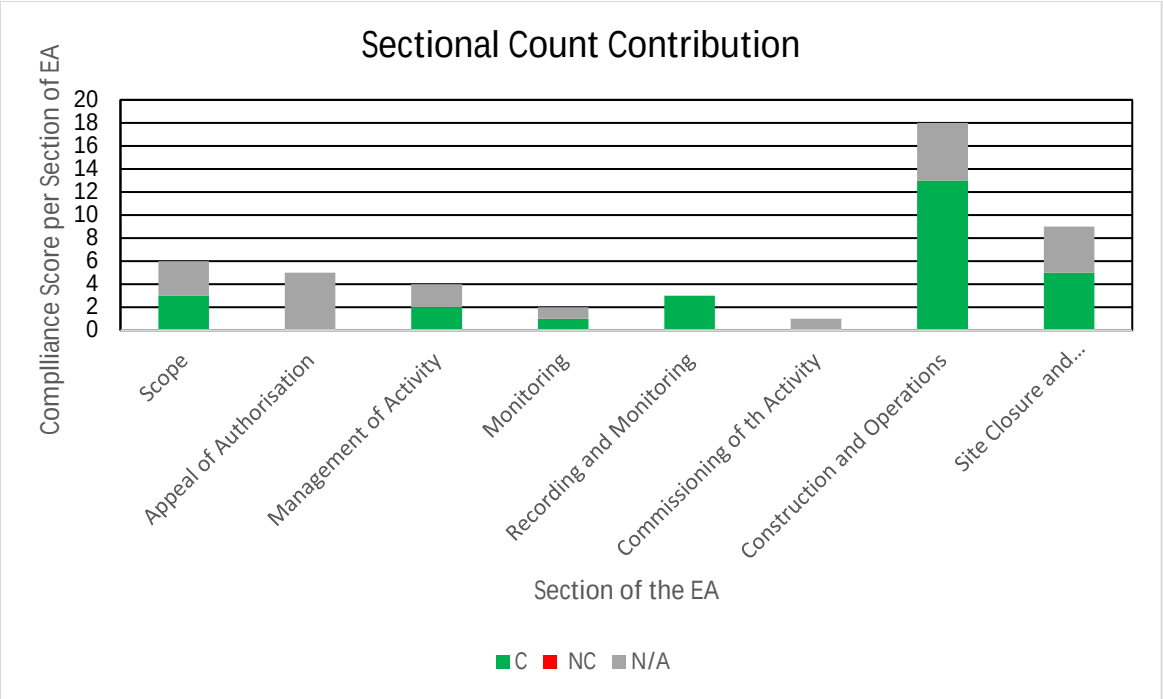

Figure 6-1 - Number/Count contribution of findings made to the expansion projects EA conditions per section

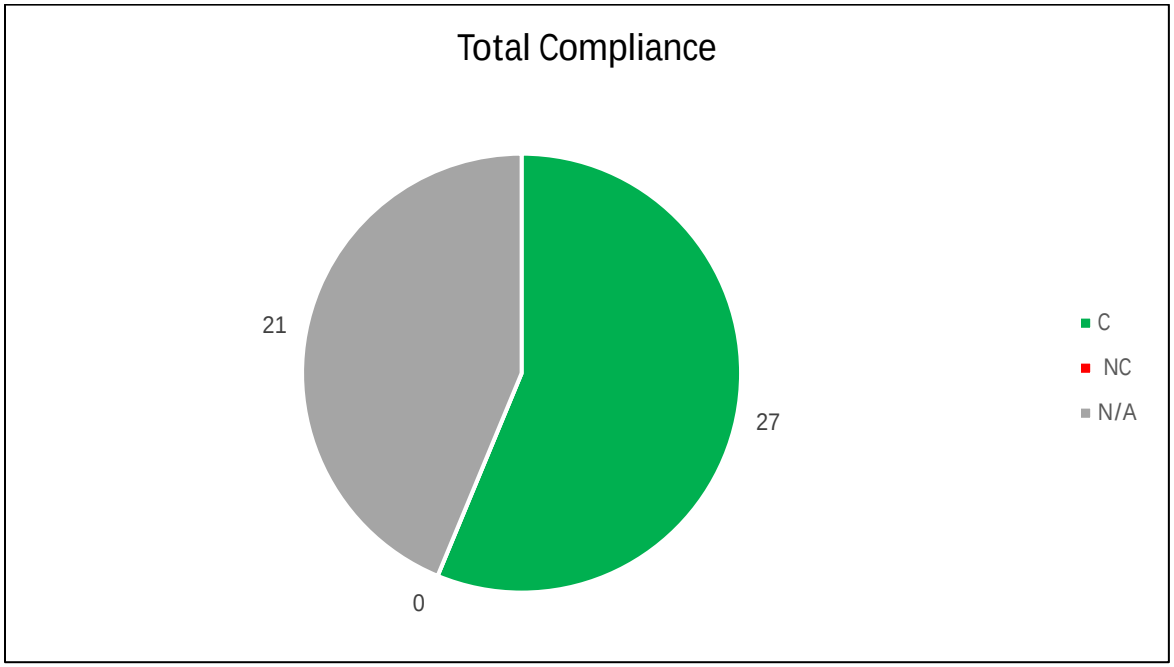

Figure 6-2 - **Overall count findings on compliance to the EA commitments**

Figure 6-3 illustrates the percentage contribution of the findings of the EA commitments and **Figure 6-4** presents the total percentage compliance for the facility.

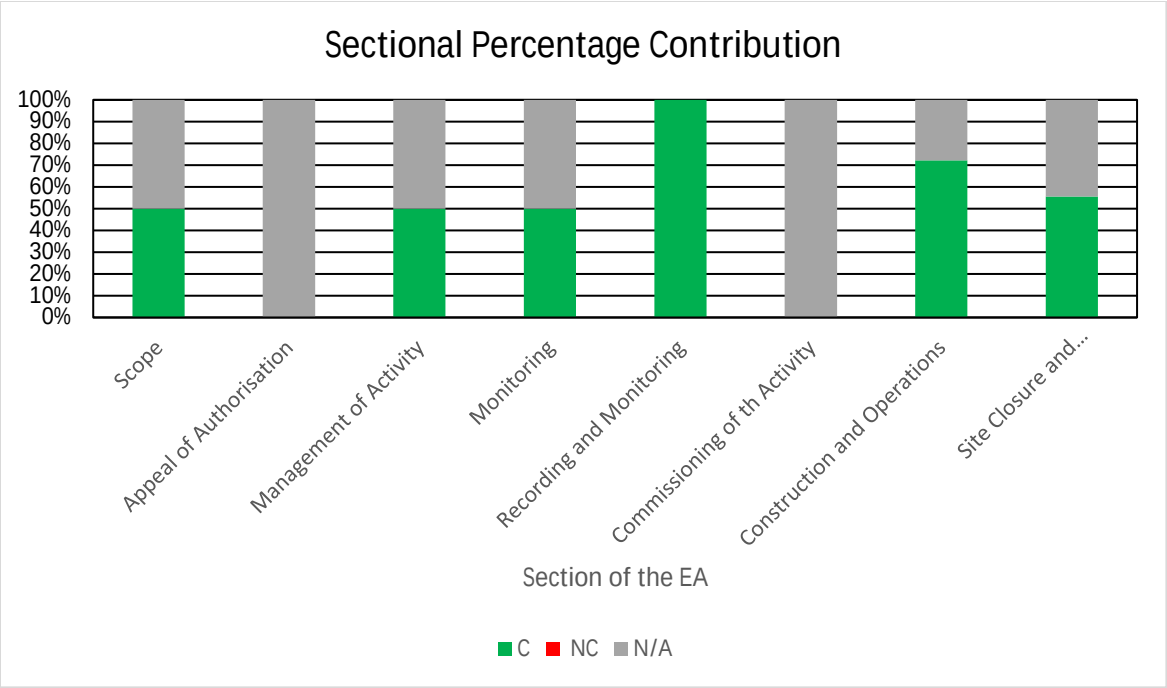

Figure 6-3 - Percentage contribution of findings made to the EA Commitments per Section

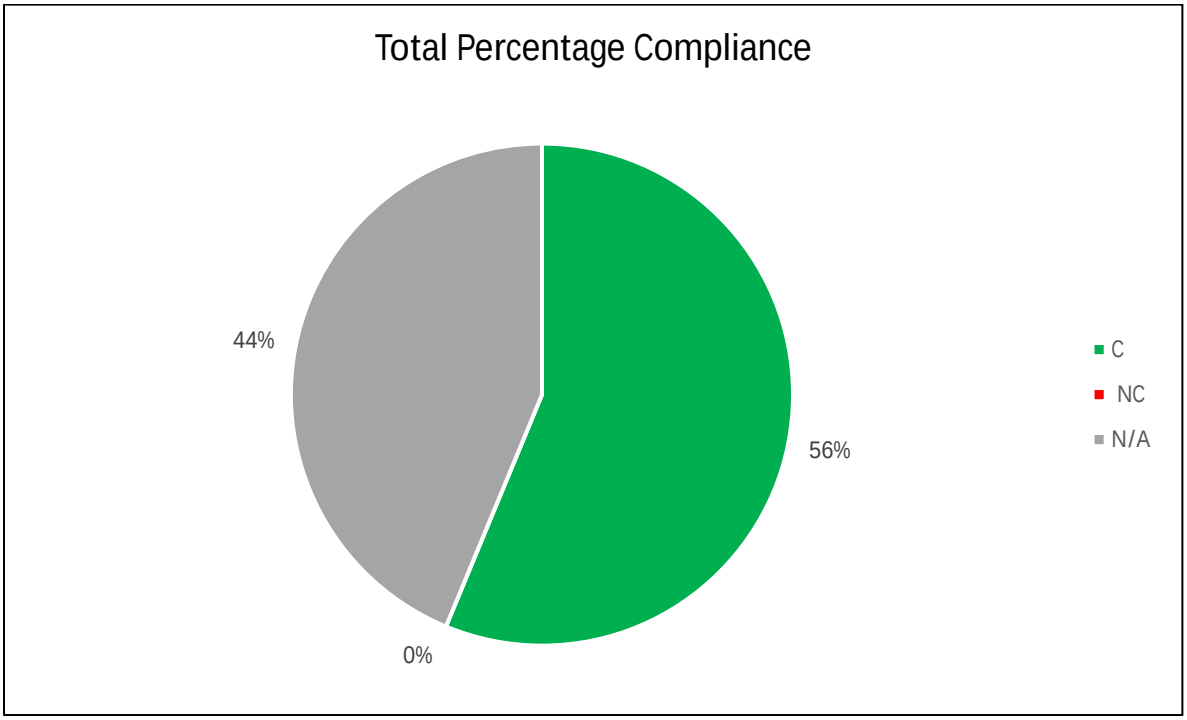

Figure 6-4 - Overall percentage findings on compliance to the EA Commitments

6.2 SASOL SASOLBURG EPU5 FACILITY EMPR

The audit findings have been summarised into the following categories: compliance, non-compliance and not applicable. The overall audit findings concerning compliance to the EMPr conditions are as listed in **Table 6-2** below.

Table 6-2 - Summary of EA Compliance Audit Findings

Section of the EMPr	No. Commitments	C	NC	N/A
Soil and Land	20	14	0	6
Flora and Fauna	4	0	0	4
Surface Water	12	10	0	2
Ground Water	11	7	0	4
Effluent Generation	4	4	0	0
Air Quality	5	3	0	2
Noise	2	2	0	0
Waste	16	15	0	1
Spillages	7	6	0	1
General	3	3	0	0
Socio-economic impacts	7	7	0	0
Total	91	71	0	20
Total Percentage		78%	0	22%
Percentage Compliance with Applicable Conditions	100%			

Figure 6-6 illustrates the number/count contribution of the findings of the EMPr per section while **Figure 6-5** presents the total proportion of compliance for the facility.

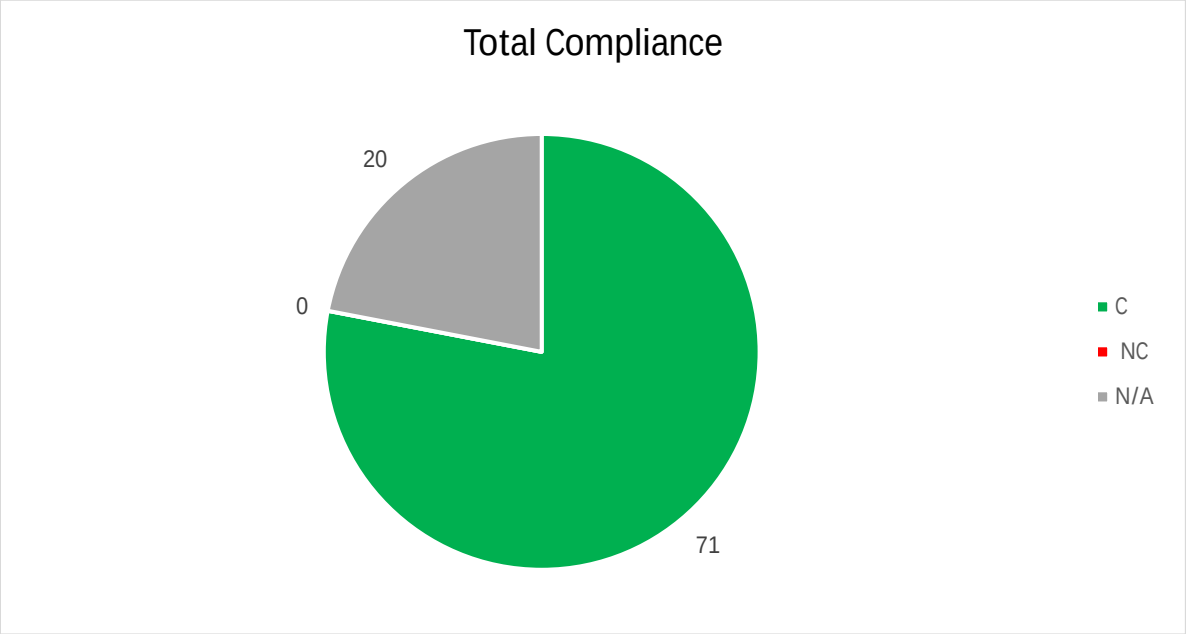

Figure 6-5 - Overall count findings on compliance to the EMPr Commitments

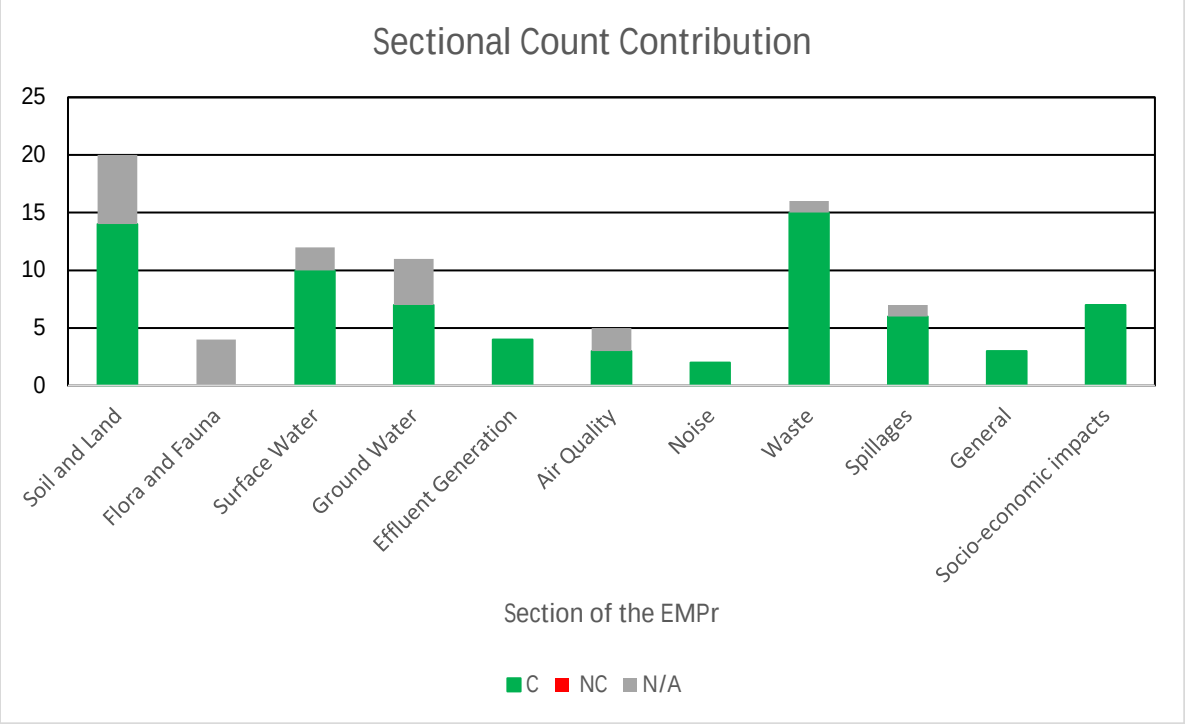

Figure 6-6 - Number/Count contribution of findings made to the EMPr Commitments per Section

Figure 6-7 presents the total percentage compliance for the facility **Figure 6-8** illustrates the percentage contribution of the findings of the EMPr commitments.

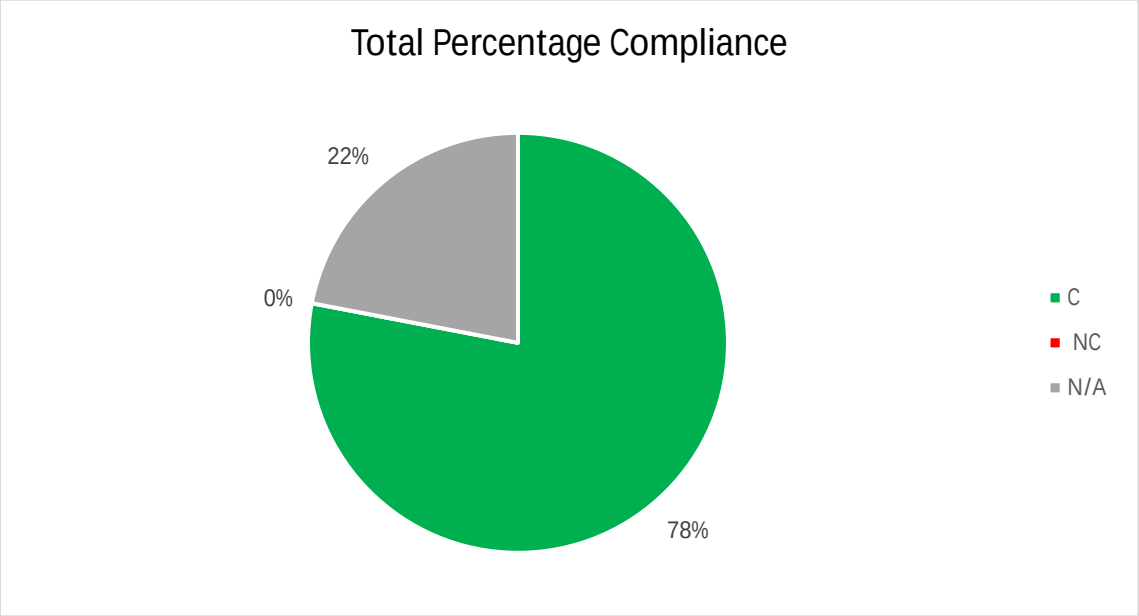

Figure 6-7 - Overall percentage findings on compliance to the EMPr Commitments

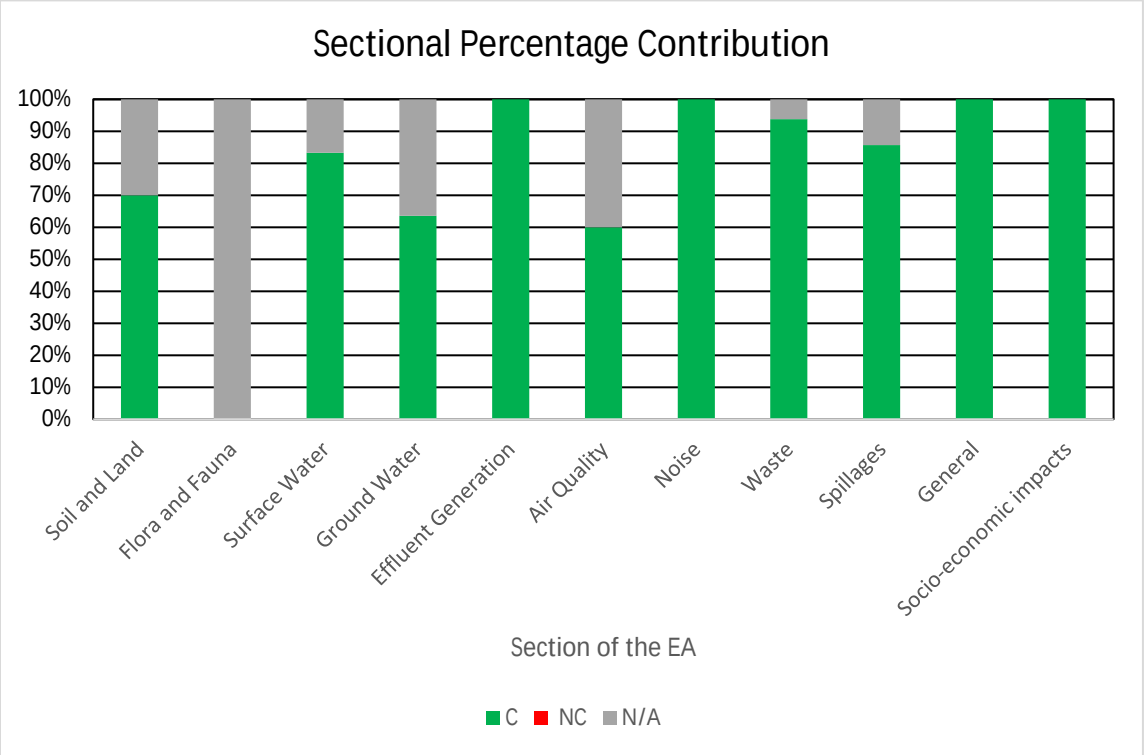

Figure 6-8 - Percentage contribution of findings made to the EMPr Commitments per Section

7 RECOMMENDATIONS

Zero non-compliances of the EA and EMPr conditions was noted during the audit. Sasol is commended for achieving 100% compliance for the EA and EMPr audit and is urged to continue to implement the environmental mitigation measures within the EA and EMPr. In addition, Sasol should continue to implement their EMS for their onsite operations and to identify new environmental risks due to changes in operations, and address these when identified on site.

Sasol is advised to continue with their comprehensive EMS and strategy for detecting environmental risks and resolving incidents and non-compliances identified on site, and to utilize the audit report as an indicator of all areas that need attention.

8 CONCLUSION

Regulation 34 and Appendix 7 of the EIA Regulations 2014 (as amended) requires an assessment of the adequacy and effectiveness of the EA as part of the audit scope, as follows:

- Assess the level of compliance with the conditions of the EA.

The EA compliance audit has identified that the majority of the EA commitments remain applicable, and the EA is considered effective. As such, WSP does not recommend any amendment of the EA as it is sufficient in managing environmental impacts. The ROD (now EA) was issued on 19 January 2009 and amended on the 18 September 2019 to govern the construction phase as well as the operational phase impacts.

WSP do acknowledge that Sasol has systems in place which are considered to be more robust for monitoring compliance and implementing changes than through the EA audit; that includes the annual audit of each business unit to meeting the ISO 14001 standards.

New environmental impacts and risks are continually identified and assessed by Sasol's Environmental Department, which drives improvement of implementation measures. This Department facilitates Environmental Risk Assessments per business entity to ensure that gaps are addressed through implementation of mitigation measures via the Integrated Management System.

In conclusion, WSP recommends that Sasol continues to operate each business unit under an Environmental Management System to meet licence compliance conditions (EMPr, WUL, EA, AEL, etc). This is effective as mitigation against any gaps in the EMPr, and to regularly identify and address new environmental impacts and risks.

9 DECLARATIONS

INDEPENDENT AUDITOR DECLARATION

Appendix 7 of GNR 982 refers to the need for the independent auditor to declare his/her independence of the holder of the EA.

NAME OF INDEPENDENT AUDITOR: Ian Malloy

UNDERTAKING

I, Ian Malloy, the undersigned and duly authorized thereto, by WSP, have studied Sasol LPG Facility and compared the operations to the approved EMPr and compiled this report to the best of my knowledge. This section should be read with Sub-section 2.1.

Signed at Cape Town on this the 06 June 2023.

SIGNATURE OF INDEPENDENT AUDITOR

SIGNED IN LINE WITH THE REQUIREMENTS OF NEMA, GNR 982, APPENDIX 7, AS PUBLISHED UNDER THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO. 107 OF 1998), AS AMENDED.

Appendix A

AUDITORS CV

Ian Malloy

Earth and Environment, Environmental Planning & Advisory, Senior Consultant

CAREER SUMMARY

Ian has ten years of working experience as an Environmental Consultant focussing on environmental management and auditing, waste planning, and environmental engineering. His key career and academic development are in the field of environmental management and engineering with a focus on waste, wastewater and water. The projects completed include Water Use Licence (WUL) and Waste Management Licence (WML) Applications, Environmental Impact Assessments (EIAs), Basic Assessments (BAs) and developing Environmental Management Programmes (EMPrs), developing IWMPs for District and Local Municipalities, WMPs for industry, conducting environmental compliance audits and GRAP 17 and 19 assessments of landfill sites.

<1 year with WSP

9 years of experience

Area of expertise

Waste Management and Planning

Environmental Management

Waste Management Licencing (WML)

Water Use Licencing (WUL)

Basic Assessment (BA)

Environmental Impact Assessment (EIA)

Development of Environmental Management Programmes (EMPr)

Compliance Auditing (EA, EMPr, WML, WUL)

Development of municipal Integrated Waste Management Plans (IWMPs)

Environmental Engineering (Wastewater Treatment and Waste Management)

GRAP 17 and 19 Assessments of Landfill Sites

Surface and Groundwater Monitoring

Language

English and Afrikaans

EDUCATION

Master of Water Engineering, University of Cape Town	2020 – 2023 (in progress)
Bachelor of Engineering (Honours), Environmental Engineering, University of Pretoria	2019
Bachelor of Chemical Engineering, Stellenbosch University	2016

ADDITIONAL TRAINING

Ian Malloy

Earth and Environment, Environmental Planning & Advisory, Senior Consultant

ISO 9001:2015 SAATCA registered lead auditor training course (Quality Management Systems) 2015

PROFESSIONAL MEMBERSHIPS

Registered as a Candidate Engineer: Engineering Council of South Africa (ECSA), Registration No: 2021204206 2020

Member of the Institute of Waste Management Southern Africa (IWMSA), Registration No: 30120185, Western Cape Branch Committee Member 2020

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd	November 2022 - present
GIBB Environmental (Pty) Ltd	2019 – 2022
GIBB (Pty) Ltd	2013 – 2019

PROFESSIONAL EXPERIENCE

Waste Management and Planning

District and Municipal Integrated Waste Management Plans and Waste Minimisation Plans

Garden Route District Municipality, Garden Route District Municipality Waste Minimisation Strategy, South Africa
2020 to 2021
Environmental and Waste Consultant
Develop waste minimisation strategies for the Garden Route District Municipality and the seven local municipalities.

Midvaal Local Municipality, Midvaal Local Municipality Integrated Waste Management Plan Review, South Africa
2020 to 2021
Environmental and Waste Consultant
Revision of the Midvaal Local Municipality Integrated Waste Management Plan (IWMP).

Vuthela iLembe LED Programme, Ilembe District Municipality IWMP, South Africa
2018 to 2020
Environmental and Waste Consultant
Development of the iLembe District IWMP and the revision of the KwaDukuza and Mandeni Local Municipality IWMPs.

Scoping Assessment for a regional landfill site for the iLembe District Municipality.

Ingquza Hill Local Municipality, Ingquza Hill Local Municipality IWMP, South Africa
2020 to 2021
Environmental and Waste Consultant
Development of the Ingquza Hill Local Municipality IWMP

Elundi Local Municipality, Elundi Local Municipality IWMP, South Africa
2015 to 2016
Junior Environmental and Waste Consultant
Development of the Elundini Local Municipality IWMP

Dr Ruth S Mompati District Municipality, Dr Ruth S Mompati District Municipality IMWP, South Africa
2015 to 2016

Ian Malloy

Earth and Environment, Environmental Planning & Advisory, Senior Consultant

Junior Environmental and Waste Consultant
Development of the Dr Ruth S Mompati District Municipality and the five Local Municipality IWMPs (Naledi, Mamusa, Greater Taung, Lewkwa-Teemane and Kagisano Molopo Local Municipalities)

Development Bank of South Africa, DBSA Material Recovery Facility Feasibility Assessment, South Africa
2020 to 2021
Environmental and Waste Consultant
Feasibility assessment for the development of small material recovery facilities across four Provinces (Eastern Cape, Northern Cape, Limpopo and Mpumalanga)

ECDC Hazardous Waste Facility Feasibility Study Phase 2, South Africa
2017
Environmental and Waste Consultant
Hazardous waste survey, feasibility study and cost analysis for the development of a hazardous waste facility in the Eastern Cape, south Africa

Landfill GRAP 17 and 19 Assessments

Kannaland Local Municipality, Kannaland Local Municipality GRAP 17 And 19 Assessments, South Africa
2019 to 2019
Environmental and Waste Consultant
GRAP 17 and GRAP 19 assessments of 4 landfill sites in municipality (Ladismith, Calitzdorp, Zoar and Van Wyksdorp Landfill Sites).

Nyandeni Local Municipality, Nyandeni Local Municipality GRAP 17 And 19 Assessments, South Africa
2019 to 2019
Environmental and Waste Consultant
GRAP 17 and GRAP 19 assessments of 1 landfill site and 1 transfer station in municipality.

Environmental Impact Assessment and Basic Assessment Process

Stellenbosch Local Municipality, Devon Valley Landfill Site (New Cell 4), South Africa
2021 to 2022
Environmental Consultant
Basic Assessment Process for the amendment of the Waste Management Licence for the development of a new cell at the Devon Valley Landfill Site in Stellenbosch, Western Cape, South Africa

Department of Forestry, Fisheries and Environment, Waste Management Licence Applications for Five Unlicenced Waste Disposal Facilities, North West, Mpumalanga and Eastern Cape, South Africa
2021 to 2022
Environmental Consultant
Environmental Impact Assessment and Basic Assessment Processes for the licencing of five (5) unlicenced Waste Disposal Facilities in the North West, Mpumalanga and Eastern Cape provinces, South Africa**.** Four (4) applications for operation Waste Management Licences (WMLs) and one (1) application for an operation to decommissioning WML.

Centurion Aerospace Village (CAV), CAV Sewer Pipeline, , South Africa
2021 to 2022
Environmental Consultant
Basic Assessment for the installation of a sewer pipeline to be connected to the existing municipality sewer services network, Centurion, City of Tshwane Metropolitan Municipality, Gauteng, South Africa.

Environmental Compliance Audits

Orion Engineered Carbons (Pty) Ltd, NUP and EMPr Audit for the storage of CBO in tanks at the Dom Pedro Facility at the Port of Port Elizabeth, South Africa

Ian Malloy

Earth and Environment, Environmental Planning & Advisory, Senior Consultant

2022 - 2023
Environmental Auditor
External compliance audit of the NUP (Noxious Use Permit) and EMPr for the storage of carbon black oil (CBO) in tanks at the Dom Pedro facility at the Port of Port Elizabeth.

Dekro Paints (Pty) Ltd, Dekro WML External Compliance Audit, Cape Town, South Africa
2023 to 2023
Environmental Auditor
External compliance audit of the waste management licence for the solvent recovery facility at the Dekro Paints facility in Kuilsriver, Cape Town.

Sasol Pipeline Operations, Sasol SNI and GNP Pipeline Audits, South Africa
2022 to 2022
Environmental Auditor
External compliance audit of the SNI and GNP pipeline against the EA, EMPr and WUL conditions

Sasol South Africa Limited, Sasol Sasolburg EA Audits, South Africa
2022 to 2022
Environmental Auditor
External compliance audit of nine unit operations against their EA and EMPr conditions at the Sasol One Complex in Sasolburg.

Langeberg Local Municipality, Langeberg Local Municipality Landfill External Audits, South Africa
2019 to 2022
Environmental Auditor
External annual audits of 3 landfill sites (Ashton, Bonnievale and Montagu) according to their waste management licence conditions

Kannaland Local Municipality, Kannaland Local Municipality Landfill External Audits, South Africa
2019 to 2019
Environmental Auditor
External audit of 4 landfill sites in the municipality according to waste management licence conditions

Environmental Management Plans and Environmental Control Officer

Orion Engineered Carbons (Pty) Ltd, Operational Environmental Management Programme (OEMPr) for the OEC Tanks Farms at Latita Tank Farm, Zone 7, Coega SEZ, Port of Ngqura, South Africa
2022 - 2023
Project Manager
Develop the OEMPr for the development of the OEC Tank Farm within the Latita Tank Farm in Zone 7, Coega SEZ, Port of Ngqura, Gqeberha, South Africa.

Eskom, Eskom Hotazel-Mothibistad 132 kV Power Line Installation with Associated Substations, South Africa
2017 to 2019
External Environmental Control Office
Monthly ECO audits for the construction of 132 kV power lines and substations in Hotazel and Kuruman in the Northern Cape.

Mott MacDonald, R61 Road Upgrade from Majola Tea to Tombo, South Africa
2015 to 2019
External Environmental Control Officer
Monthly ECO audits for the road upgrade and construction of the R61 road from Majola Tea to Tombo, Eastern Cape.

OR Tambo District Municipality and Amatole Water, King Sabata Dalinyebo Local Municipality Presidential Intervention Bulk Water Supply Infrastructure Upgrade Project title, South Africa

Ian Malloy

Earth and Environment, Environmental Planning & Advisory, Senior Consultant

2013 to 2019
External Environmental Control Officer
Coordinate all environmental management and auditing of all related bulk water supply projects. Undertake monthly ECO audits for the upgrade of the bulk water infrastructure within the King Sabata Dalinyebo Local Municipality. Projects included the construction of numerous reservoirs and installation of pipelines within the municipal area.

Eskom, Eskom Hombe and Taweni Substation with Associated 132 kV Power Lines, South Africa
2013 to 2016
External Environmental Control Officer
Monthly ECO audits for the construction of two 132 kV power lines and the Hombe and Taweni substations in the Eastern Cape.

Eskom, ESKOM GREATER MTHATHA POWER LINE, South Africa
2013 to 2014
External Environmental Control Officer
Monthly ECO audits for the construction of a 132 kV power line in Mthatha, Eastern Cape.

PD Naidoo & Associates, R61 Road Upgrade in Engcobo, South Africa
2013 to 2016
External Environmental Control Officer
Monthly ECO audits for the road upgrade and construction of the R61 road in Engcobo, Eastern Cape.

Dissertations and Research Projects

Department of Civil Engineering, University of Cape Town, Master of Engineering Dissertation.

2023

Utilisation of the Biomath protocol for calibration of a model based on biological sulfate reduction (BSR) for the treatment of coal mine drainage and Fischer-Tropsch Reaction Water. Conduct a global sensitivity analysis (GSA) and uncertainty analysis to calibrate the model, determine the most sensitive parameters in the prototype CSTR-BSR model developed by Dr. T. Harding and reduce the uncertainty of the results during the simulations (with the use of DHI West®).

Department of Chemical Engineering, Stellenbosch University, Bachelor of Engineering, Research Project

2016

Conduct laboratory experiments to investigate the factors that influence elution of gold from and adsorption of gold onto activated carbon. This was done to determine if gold can be transferred from fine to coarse activated carbon in solution during or after the carbon adsorption process to extract gold stored on fine activated carbon.

Matilda Mbazo

Earth and Environment, Environmental Planning & Advisory, Intern

CAREER SUMMARY

Matilda Mbazo graduated from Monash South Africa with a BSc in Social Sciences (cum laude) in 2021 and completed her BSc Hons in Geography at University of Witwatersrand in 2022. Matilda is currently pursuing her MSc in Environmental Sciences at University of Witwatersrand. Matilda is an Intern in the Environmental Planning and Advisory Division of WSP Group Africa based in the Waterfall office. Matilda has less than a year experience in the environmental field and currently provides technical and strategic input on a diverse range project in the environmental management field, including environmental audits.

1 < years with WSP

Language

Afrikaans, English, Tswana, Ndebele, and Zulu

EDUCATION

Monash South Africa – Bachelor's degree in Social Sciences	3 years
University of Witwatersrand - Bachelor of Science Honours (Geography)	1 year
University of Witwatersrand – Master of Science (Environmental Sciences)	current

PROFESSIONAL HISTORY

WSP – Intern	present
WSP - Vacation Student	2021 - 2022
IIE MSA – Administration Assistant	2020 - 2021
Cotton On Group – Sales Associate	2020 - 2021

PROFESSIONAL EXPERIENCE

FFS Chloorkop Fired Heater

July 2022 to June 2023

ECO: EA and EMPR Compliance Audit

Sasol South Africa Limited, Sasol Sasolburg EA Audits, South Africa

October 2022 to June 2023

Environmental Auditor

At the Sasol One Complex in Sasolburg, six unit operations were subject to an external compliance audit against their EA and EMPr criteria.

Dissertations and Research Projects

Department of Geography, Archaeology and Environmental Studies, University of Witwatersrand, Master of Science Dissertation.

2023

To quatify the interactive effects of extreme drought, fire frequency, and mega-herbivory on tree density in a Marula-Knobthorn savanna using Geographic Information Systems and Remote Sensing.

Department of Geography, Archaeology and Environmental Studies, University of Witwatersrand, Bachelor of Science (Geography), Research Project

2022

Assessment of flood impact at the Hennops river, streaming from Tembisa to Centurion, using Remote Sensing and Geographic Information System.

Building 1, Maxwell Office Park
Magwa Crescent West, Waterfall City
Midrand, 1685
South Africa

wsp.com

Annexure B – Establishment of Ethylene Purification Unit /EPU 5) Facility– ref (EMS/1/(e)/08/32)
Environmental Management Programme Operational Phase

Mitigations measures identified during the environmental impact assessment, for the operational phase of the project, defining the impact management outcome and impact management actions to enable compliance to this regulation.

Impact management outcome	Impact management action
1. Soil and Land Ensure sound environmental management regarding soil and land capability during all phases of the project	1.1. All operational activities are to be undertaken from designated project building and materials storage areas.
	1.2. The necessary containment facilities, such as bunded areas must be well maintained in order to ensure integrity.
	1.3. The pipeline system carrying the spent caustic solution must be maintained on a regular basis.
	1.4. Ensure that the repair operation requirements for the pipelines from the EPU5 Facility to the Chlorine Plant are monitored and maintained, in order to ensure optimum performance.
	1.5. All incidents and spillages must be cleaned up, the area rehabilitated, and the incident closed out in accordance with the Emergency Response and Preparedness procedure.
	1.6. industrial waste skips must be correctly labelled and placed with the correct signage.
	1.7. The storage area for industrial waste/material must be within a designated and bunded area, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.
	1.8. The industrial waste/material storage area should be covered and labelled.
	1.9. Industrial waste must be collected and disposed of at an appropriate waste disposal facility.
	1.10. Records of all waste being taken off site must be recorded and kept as evidence
	1.11. All surface run-off from EPU5 Facility Will go to the Oily Water System (OWS), except for caustic and methanol slop which will be contained and then discharged (to OWS or elsewhere} under controlled conditions.
	1.12. Chemical and hazardous material handling Procedure
	1.13. A Safety Datasheet (SDS) should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.
2. Surface water Ensure sound environmental management regarding surface water during all phases of the project	2.1. All surface run-off from EPU5 Facility will go to the OWS, except for caustic and methanol slop which will be contained and then discharged (to OWS or elsewhere) under controlled conditions
	2.2. All chemicals and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.
	2.3. SDS should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.
	2.4. Emergency Preparedness and Response Procedures must be provided should an incident or the spillage of hazardous chemicals occur.
	2.5. Industrial waste disposal bins will be made available for disposal of all industrial waste to contractors and employees.
	2.6. Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately at an approved waste disposal facility or recycled where possible.

	2.7. Records of all waste being taken off site must be recorded and kept as evidence, as well as evidence of correct disposal must be kept.
	2.8. Continue to monitor record and evaluate water consumption
	2.9. Implement water saving practices through existing environmental management systems.
3. Groundwater Ensure sound environmental management regarding groundwater during all phases of the project	3.1. All surface runoff from EPU5 Facility will go to the OWS, except for caustic and methanol slop which will be contained and then discharged (to OWS or elsewhere) under controlled conditions and thus will not seep or contaminate the groundwater.
	3.2. All chemicals and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored
	3.3. SDS should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.
	3.4. Emergency Preparedness and Response Procedures must be provided should an incident or the spillage of hazardous chemicals occur
	3.5. Ensure that the proposed buildings are fully contained.
	3.6. Ensure that any storage facilities are appropriately lined.
4. Effluent Ensure sound environmental management regarding effluent generation and management during all phases of the project	4.1. The effluent generation will be addressed through the treatment, re-cycling and re-use of effluent.
	4.2. All effluent handling is to be undertaken in accordance with Standard Operating Procedures and the associated Safety Datasheet for the hazard material (where applicable). This needs to take cognisance of storage, handling, transportation and disposal of any effluent.
	4.3. Effluent handling and storage facilities must be appropriately lined and bunded to ensure that spillages are contained.
	4.4. Emergency Preparedness and Response Procedures must be provided should an incident or the spillage of hazardous chemicals occur.
5. Air Quality Ensure sound environmental management regarding air quality during all phases of the project	5.1. Sources of emission associated with-the Operational Phase include nitrogen, vent air and fugitive emissions to atmosphere which is non-hazardous, and it is not released on a continual basis unless during tank filling. These units should be operated in accordance with their design specification and all maintenance and repair operation requirements must be maintained in order to ensure optimum performance and minimal emissions during tank filling.
	5.2. Flare gas will combust to clean C02 and water vapour. All maintenance and repair operation requirements must be undertaken in order to ensure optimum performance.
	5.3. Air quality monitoring and must be initiated for this facility to verify the emissions from the process at the start of commissioning, as part of Sasol's overall air quality monitoring.
6. Waste management Ensure sound environmental management regarding the waste management on site during all phases of the project	6.1. General waste disposal bins will be made available for disposal of all general waste to contractors and employees.
	6.2. General waste disposal bins must be correctly labelled.
	6.3. Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately at an approved waste disposal facility
	6.4. Records of all waste being taken off site must be recorded and kept as evidence.
	6.5. Industrial waste disposal bins will be made available for disposal of all industrial waste to all contractors and employees.
	6.6. General industrial waste skips must be correctly labelled and placed with the correct signage
	6.7. A waste management procedure must be implemented.
	6.8. Waste will be temporarily stored on site (less than 90 days) before being disposed of appropriately at an approved waste disposal facility.

	6.9. Records of all waste being taken off site must be recorded and kept as evidence.
	6.10. Hazardous materials will be generated if there are spillages. This waste should be cleaned up using absorbent material provided in spill kits on site.
	6.11. Absorbent materials used to clean up spillages should be disposed of in a separate hazardous waste bin.
	6.12. The storage area for hazardous material must be in an area that takes cognisance of chemical compatibility and is in a designated and bunded area, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.
	6.13. The hazardous storage area should be covered, labelled and well ventilated
	6.14. All contractors and employees will be provided with the appropriate Personal Protective Equipment (PPE) for handling hazardous materials.
	6.15. SDS should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.
7. Spillages Ensure sound environmental management regarding the spillages and incidents should they occur during all phases of the project	7.1. All chemicals and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.
	7.2. SDS should be displayed for all chemicals and hazardous materials stored on site. This must take cognisance of the storage, handling, transportation and disposal of chemicals and hazardous materials.
	7.3. Emergency Preparedness and Response Procedures must be provided should an incident or the spillage of hazardous chemicals occur.
	7.4. All surface runoff from EPU5 Facility will go to the OWS, except for caustic and methanol slop which will be contained and then discharged (to OWS or elsewhere) under controlled conditions and thus will not seep or contaminate the groundwater.
	7.5. All chemicals and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance. The bunded area must also be able to contain 110% volume of the largest container stored.
	7.6. The pipeline system carrying the spent caustic solution must be maintained on a regular basis.
	7.7. Ensure that the repair operation requirements from the EPU5 Facility to the Chlorine plant are monitored and maintained, in order to ensure optimum performance.
	7.8. All incidents and spillages must be cleaned up, the area rehabilitated, and the incident closed out in accordance with the Emergency Response and Preparedness procedure.