

REPORT

Environmental and Social Impact Assessment of the Proposed Malting Plant Development near Sedibeng Brewery, Gauteng Province (Ref Gaut 002/24-25/E0003)

Final ESIA Report

Client: Soufflet Malting South Africa

Reference: MD6264-RHD-XX-XX-RP-X-0001

Status: Final/02

Date: 14 October 2024



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Date: 14 October 2024

Project name: MD6264

Project number: MD6264

Author(s): Sibongile Gumbi

Drafted by: Sibongile Gumbi

Checked by: Prashika Reddy

Date: 14-10-2024

Approved by: Prashika Reddy

Date: 14-10-2024

Classification

Project related

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Note: Key changes from the draft ESIA to the final ESIA have been underlined for ease of reference.

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1/2022)

Kindly note that:

1. This **Basic Assessment Report** is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This template is current as of April 2022. It is the responsibility of the EAP to ascertain whether subsequent versions of the template have been published or produced by the competent authority.
3. A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.
4. **A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority (uploaded to the EIA online system) empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application. The EIA online system can be accessed at <https://eia.gauteng.gov.za>.**
5. **A copy (PDF) of the final report and attachments must be uploaded to the EIA online system. The EIA online system can be accessed at <https://eia.gauteng.gov.za>.**
6. **Draft and final reports submitted in terms of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) must be emailed to environmentsue@gauteng.gov.za.**
7. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
8. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
9. An incomplete report may lead to an application for environmental authorisation or Waste Management License being refused.
10. Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorization or Waste Management License being refused.
11. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation or Waste Management License being refused.
12. The applicant must fill in all relevant sections of this form. Incomplete applications will not be processed. The applicant will be notified of the missing information in the acknowledgement letter that will be sent within 10 days of receipt of the application.
13. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
14. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
P.O. Box 8769
Johannesburg
2000
Ground floor, Umnotho House, 56 Eloff Street, Johannesburg
Administrative Unit telephone number: (011) 240 3051/3052
Department central telephone number: (011) 240 2500

(For official use only)

NEAS Reference Number:						
File Reference Number:						
Application Number:						
Date Received:						

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

Not Applicable

Is a closure plan applicable for this application and has it been included in this report?

No

if not, state reasons for not including the closure plan.

A Closure Plan is not applicable to the Project and has not been included.

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity?

Yes

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person?

Yes

If no, state reasons for not attaching the list.

N/A

Have State Departments including the competent authority commented?

Yes

If no, why?

N/A

1. SECTION A: ACTIVITY INFORMATION

1.1 PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

PROPOSED DEVELOPMENT OF A NEW MALTING PLANT IN THE SEDIBENG DISTRICT MUNICIPALITY, GAUTENG PROVINCE.

1. Project Background

Soufflet Malt South Africa (Pty) Ltd, a subsidiary of the Soufflet Group, has obtained funding from the International Finance Corporation (IFC) for the establishment of a malt plant which will be located in the Sedibeng District of Gauteng (“the Project”). The Project, which is expected to be operational for 50 years, will have an annual capacity of 100 Kilo Tonnes (KT)/year in Phase 1 and 135KT/year in Phase 2 for the local market.

The Project is envisaged as an import substitution and enhancement of barley production in the agricultural sector in South Africa. The beer sector in South Africa contributes to roughly 1 in every 66 jobs in the country, with the supply chain comprising farmers, packaging manufacturers, brewers, distributors, and retailers.

Soufflet Malt South Africa has appointed Royal HaskoningDHV to provide independent Environmental Assessment Practitioner (EAP) services for the proposed Project. The Project must comply with national legislation specifically the EIA Regulations 2014 (as amended) and the IFC Performance Standards (PS) and Good International Industry Practice (GIIP).

It should be reiterated that the proposed Project is an acceleration of the natural process of germination in a controlled environment. No fermentation takes place in the malting process. Further to this, the malting plant is not an extension to the Sedibeng Heineken Brewery which is a separate facility owned and operated by Heineken.

2. Location of the Project

The Project is located to the south of the Heineken Sedibeng Brewery within the Graceview Industrial Part (Erf 244 Graceview) and is a greenfield area (approximately 10ha) within the Sedibeng District- and Midvaal Local Municipality – MLM (**Figure 1** and **Figure 2**). The R59 road runs east of the Project, with the Heineken Solar PV Plant located to the west. The Project site is owned by Heineken South Africa (Pty) Ltd and zoned as “Industrial 1 with an annexure for an Agricultural Industry.”

The Graceview Industrial Park is the best location due to:

- Being strategically located next to the Heineken Sedibeng Brewery.
- Availability of ample land for industrial development.
- Located in close proximity to the national highway network (R59).

- Ease of access to raw materials.
- Availability of variety of types of labour and creation of employment opportunities.



Figure 1: Location of the Study Area



Figure 2: Location of the Study Area (with the Plant Layout)

3. Process Description

The main aim of malting is to transform the food reserves of grain, which are insoluble starch and protein, into a substrate capable of dissolution and extraction by hot water during the later mashing stage to produce wort. The malting of barley for brewing utilizes and directs nature's germination process. In nature, when a seed, any seed, is planted in the ground, it takes up moisture, and with the right balance of moisture and warmth it germinates or sprouts.

Prior to kilning, the malting production process follows exactly the natural steps through steeping (the moisture up-take) and germination (the enzyme creation, protein reduction, starch simplification, and cell wall weakening). After these enzyme actions take place, modification for the purposes of the brewer is complete. Maltsters and brewers are interested in the created enzymes and the partially digested (modified) barley kernel that represent the state of the kernel at the end of germination. The maltster interrupts the germination process with kilning. In the kiln, the germinated barley is first dried to deprive the growing barley kernel of moisture to stop the germination process, and then cured at higher temperatures for colour and flavour development.

Combining the fundamentals of germination with a kilning step, results in a very simple batch malting process that involves barley, lots of water and air, and applied heat to dry and cure the malt. The key differences between a barley kernel germinating in nature and in a production malting process are the

requirement to run a scheduled and repeatable production process, and the effect of massed seeds in close proximity to each other performing germination simultaneously.

The malting process needs a large amount of water and air, along with the utility infrastructure to seasonally heat and cool them. Malting is a batch process without any continuous elements. The grain in process is moved from malting vessel to malting vessel for each progressive step.

The total malting process generally takes 7 – 9 days, consisting of 2 days of steeping, 4 – 5 days of germination, and 1 - 2 days of kilning. After kilning, there is a critical cooling step before storage, followed by an aging period and the blending of batches prior to conveying.

The malting production process is illustrated in **Figure 3**:

- Barley intake and storage.
- Steeping: initiation of growth through forced grain hydration.
- Germination: controlled growth of barley to facilitate endosperm modification.
- Kilning: the termination of grain growth to fix extract potential and malt specifications through grain dehydration.
- Distribution – the kilned malt is dispatched to the Heineken Sedibeng Brewery via a conveyor system.

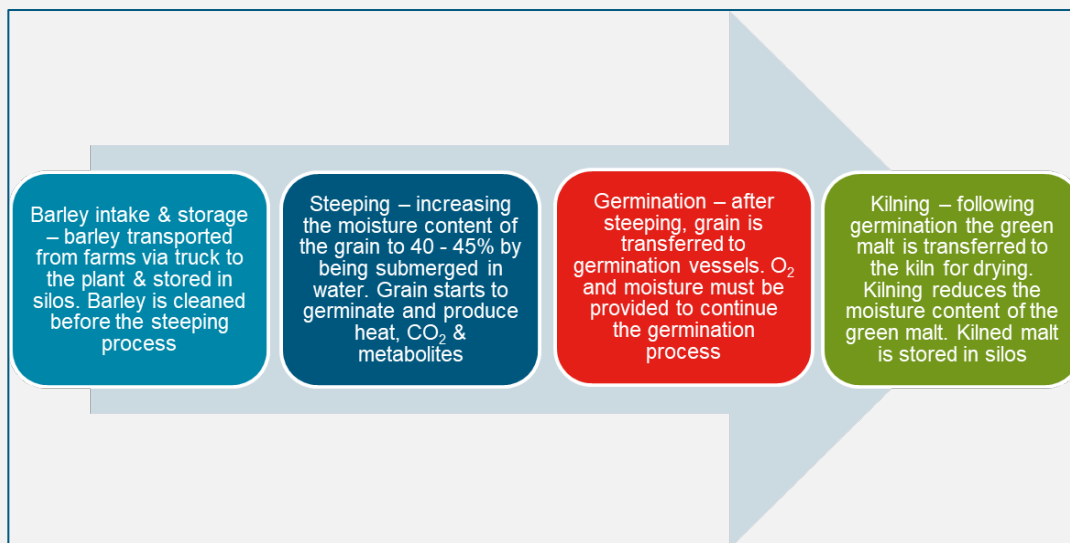


Figure 3 : Malting Process

3.1 Malting Technology

The Project will consist of stainless steel cylindro-conical steeping tanks, circular stainless steel lined germinating boxes and kilning section contained in circular building (inner stainless steel coated). Circular malting vessels are the current standard. Steeping vessels having conical bottom tanks with screen area in the cone bottom for water fill and drain, and to establish air flow with a suction fan when the barley is on air rest. Cylindro-conical tanks are simple and self-emptying. In the malting process, large quantities of water is necessary during the steeping (major share) and germination phases to transform barley into malt. During steeping the grain is immersed. During germination, the grain is kept in a moist condition by

spraying. The Project uses steeping tanks designed to reduce water consumption and loss compared to traditional tanks.

Moreover, dry transfer (instead of wet transfer using water) of the steeped barley from the steeping tank to the germinating box reduces considerable amount of water. To restore clean water at the end of the process, all wastewater is processed in water treatment plants in compliance with legislation on water emissions to significantly reduce effluents.

Circular germination vessels and circular kilns have the advantages of simplified grain loading and unloading and offer improved distribution of air. There is no practical limitation on size for these vessels, generally they are constructed with a fixed floor and turning machine that pivots on a centre column while travelling on an outside rail.

During the processing of barley into malt, it is during the kilning phase that the most energy is used. The majority of the heat demand is for kilning process, with grain drying representing the largest heat energy use. At least 90% of the heat demand in a kiln is thought to be associated with the evaporation of water, in order to dry the malt to its final moisture content. The Project's kilns will be fitted with static glass tube heat exchangers to recover some of (about 20%) vaporization energy of water (latent heat) from the air off from the kiln, to pre-heat the ambient air coming into the kiln. The second plan for increased energy recovery that will be deployed by the Project is by installing open cycle heat pumps which will suit the malting process. Open cycle heat pumps differ from closed cycle heat pumps in that they are able to use the water evaporated from the malt as the means to recover energy. A higher energy recovery factor can be achieved than possible with closed heat pumps (about 43%).

The Project's energy recovery from the kilning process through fitting glass tube heat exchangers and possible installation of open cycle heat pumps achieves more than 60% recovery of the energy used in the kiln.

The final heat source will be from the combined heat and power (CHP) genset, optimizing to a very high level the global energy cycle. CHP will produce electricity that will be used by the heat pumps. Complementary heat will be coming from cooling of the CHP. This cycle, so called trigeneration, is the state of the art in term of energy optimization.

3.2 Components of the Project

The key components of the Project are outlined in **Table 1**.

Table 1: Project Components

Proposed Building	Description
Working building	The process of barley intake, cleaning and grading and malt blending, cleaning and bulk shipping will take place at this building.
Malt buildings/infrastructure	Barley storage silos; Steeping building; Germination vessels; Kilns; Malt storage silos; Conveyor to the Heineken Sedibeng Brewery.
Energy system	<ul style="list-style-type: none"> Capacity of the CHP (including back up system) – 8 Megawatt (MW) of heating energy, 4MW of cooling energy and 3MW of electrical power through the CHP, heat pumps and heat exchangers.

	<ul style="list-style-type: none"> ▪ 70 gigawatt hour (GWh) gas for the CHP will be used. Approximately 70GWh of gas will be used per year. ▪ Capacity of the boilers (back-up) – 2 x 6MW using liquified natural gas (LNG) as a fuel source. ▪ The Solar PV Project will not form part of the project scope but will be considered in future.
Water storage	<ul style="list-style-type: none"> ▪ The malting process consumes large amounts of water daily. The expected water usage for the current mandate based on the process mass energy balance spreadsheet is projected at 1000m³/day peak load. ▪ Water will either be provided by the Municipality and/or Rand Water as well as two boreholes with a combined capacity of 300m³ per day. ▪ One freshwater tank of 1000m³ available water storage volume. This volume includes 10% spare capacity for malt production usage demand for 24 hours. ▪ One process water tank of 1000m³ available water storage volume. This volume including the option to be 50% recycled water.
Wastewater storage and on-site wastewater treatment plant (WWTP)	<p>Effluent will be discharged directly into the ERWAT system.</p> <ul style="list-style-type: none"> ▪ Treatment of the following wastewater streams: <ul style="list-style-type: none"> ○ Domestic sewage/wastewater from the Administration building. ○ Industrial effluent/wastewater emanating from the washing and germination process of a maximum of 900m³/d. ○ Volume of wastewater treated per day – 575m³ (Phase 1). ○ On-site WWTP with a design capacity of 575m³ (Phase 1) and 750m³ (Phase 2). ○ Concrete tank at the bottom of the steeping building which will serve as (bulk) process effluent storage with a capacity of 1000m³.
Ammonia storage	Approximately 1.5 tonnes (2000m ³).
Ancillary infrastructure	Admin building, Construction laydown area, Internal conveyor system to transport grain between the Steeping building, Germination vessels, Kilning area, Bagging and chemical storage buildings, Fire pump room, gatehouse, weighbridge, truck staging area, waste pick-up area, internal access roads, staff parking.

3.3 Energy Requirements

Electricity will be generated by the CHP system while the heat generated through exhaust gases will be passed through heat pumps and heat exchangers to achieve high thermal efficiencies. Complementary heat energy will also be coming from the heat pumps in the form of cooling. This cycle, so called trigeneration, is the state of the art in term of energy optimization.

- CHP and heat pumps are commonly used in the malting activity and Soufflet Malt has extensive experience with these technologies.
- There is no need of extra energy for cooling since chilled water is a 'by-product' of a heat pump suitable for the activity.
- The local electrical network will not be unbalanced by the malting operation.
- Gas boilers will be used as a back-up system. The boilers are planned to be used only when required and will not be operated continuously.

Figure 4 depicts the Project's energy requirements.

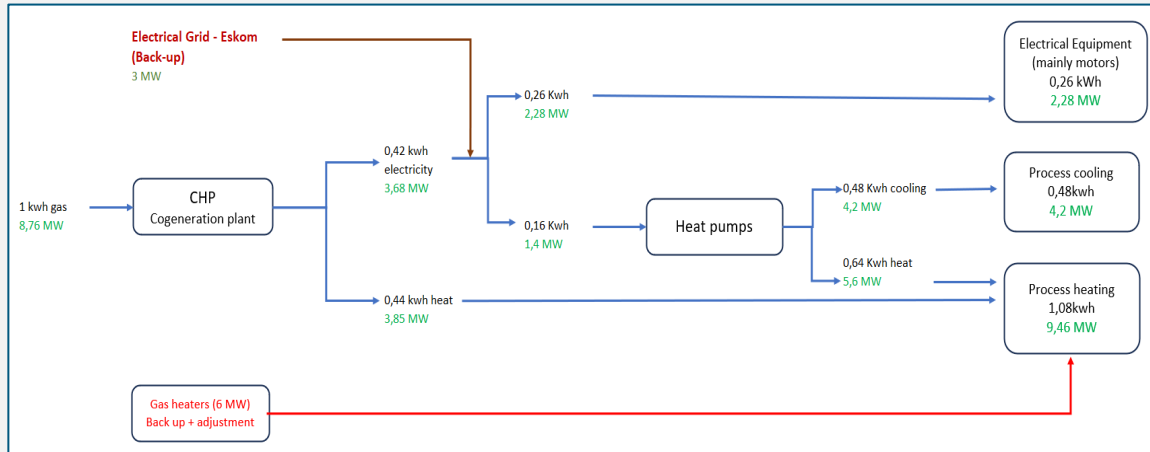


Figure 4 : The Project's Energy Requirements

4. Project Area of Influence (AOI)

According to IFC's Performance Standard (PS) 1, the Project AOI encompasses:

- The area likely to be affected by (i) the Project and the client's activities and facilities that are directly owned, operated or managed (including by Contractors) and that are a component of the Project; (ii) impacts from unplanned but predictable developments caused by the Project that may occur later or at a different location; or (iii) indirect Project impacts on biodiversity or on ecosystem services upon which affected communities' livelihoods are dependent;
- Associated facilities, which are facilities that are not funded as part of the Project, and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable; and
- Cumulative impacts that result from the incremental impact on areas or resources used or directly impacted by the project from which other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

The Project AOI includes the following components:

- The new malt plant consisting of:
 - Buildings such as barley storage silos; steeping building; germination vessels; kilns; malt storage silos; conveyor to the Heineken Sedibeng Brewery.
 - Energy system consisting of a CHP genset (including boiler back up system).
 - Water storage and wastewater treatment infrastructure.
 - Ammonia storage.
- Ancillary infrastructure such as administration building, construction laydown area, internal conveyor system, bagging and chemical storage buildings, fire pump room, gatehouse, weighbridge, truck staging area, waste pick-up area, internal access roads and staff parking.

Table 2 considers the areas likely to be affected by the Project either directly or indirectly by the Project as well as cumulative impacts per specialist discipline.

Table 2: AOI as Defined by the Specialist Disciplines

Specialist Discipline	AOI
Freshwater	500m
Noise	2km
Geohydrology	5km
Hydrology	2.5km
Socio-economic	6km
Air Quality: Human and environmental health	Site
Air Quality: Odour	3km
Climate Change	National (contribution to remaining South African Carbon budget)
Heritage and Palaeontology	Site
Traffic	2km

Select the appropriate box

The application is for an upgrade of an existing development	<input type="checkbox"/>	The application is for a new development	<input checked="" type="checkbox"/>	Other, specify	<input type="checkbox"/>
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Does the activity also require any authorisation other than NEMA EIA authorisation?

YES

If yes, describe the legislation and the Competent Authority administering such legislation


- National Water Act (Act No 36 of 1998): Department of Water and Sanitation (DWS).
- Section 23(1) of NEM: Air Quality Act (Act No 39 of 2004): Midvaal Local Municipality.
- Gauteng Provincial Environmental Management Framework Standard (GPEMF) and Exclusion of Associated Activities from the Requirement to obtain an Environmental Authorisation (No. 164, 02 March 2018) in terms of Sections 24(2)(d) and 24(10)(a) read with Section 24(10)(d) of the National Environmental Management Act, 1998 (Act No. 107 of 1998)(as amended) for the implementation of the GPEMF): GDARDE.

If yes, have you applied for the authorisation(s)?	<input type="checkbox"/>	NO
If yes, have you received approval(s)? (attach in appropriate appendix)	<input type="checkbox"/>	NO

1.2 THE PROJECT DEVELOPER

Project applicant:	Soufflet Malt South Africa
Contact person:	Jeremy Antier
Postal address:	377 Rivonia Boulevard, Edenburg, Sandton
Postal code:	2128
Telephone:	+27 082 788 1293
E-mail:	jantier@souffletmalt.com

1.3 THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

<p>Royal HaskoningDHV been involved in and/or managed several of the largest EIAs undertaken in South Africa and within the African continent to date. A specialist area of focus is on the assessment of multi-faceted projects, including the establishment of linear developments (national and provincial roads, and power lines), mixed-use developments, bulk infrastructure and supply (e.g. wastewater treatment works, pipelines, landfills), electricity generation and transmission, urban, rural and township developments, environmental aspects of Local Integrated Development Plans, as well as general environmental planning, development and management.</p>	
Environmental Assessment Practitioner:	Royal HaskoningDHV
Contact person:	Sibongile Gumbi
Postal address:	PO Box 867, Gallo Manor,
Postal code:	2052
Telephone:	+27 087 352 1506
E-mail:	sibongile.gumbi@rhdhv.com
Qualification	<u>MSc Environmental Sciences</u>
Expertise	Sibongile Gumbi has sixteen years' experience in the environmental field. Her expertise ranges from Strategic Environmental reporting, Environmental Training, Environmental Auditing and Monitoring, Environmental and Social Impact Assessment, Environmental Management Plans and Programmes, Stakeholder Engagement and Project Management.
Signature of the EAP	

1.4 APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of Legislation, Policy, or Guideline	Administering Authority	Promulgation Date
The Constitution (Act No. 108 of 1996)	National and Provincial	18 December 1996
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended)	National & Provincial	27 November 1998
National Water Act (Act No 36 of 1998).	National & Provincial	20 August 1998
National Environmental Management: Air Quality Act (Act No 39 of 2004)	National & Provincial	19 February 2005
National Environmental Management: Biodiversity Act (Act No 10 of 2004)	National & Provincial	31 May 2004
National Environmental Management: Waste Act (Act No 59 of 2008)	National & Provincial	10 March 2009
National Heritage Resources Act (Act No 25 of 1999)	National & Provincial	14 April 1999
Occupational Health and Safety Act (Act No. 85 of 1993)	National and Provincial	23 June 1993
Labour Relations Act (Act No. 66 of 1995)	National and Provincial	13 December 1995
Basic Conditions of Employment Act (Act No. 75 of 1997)	National and Provincial	13 November 1998
Employment Equity Act (Act No. 55 of 1998)	National and Provincial	12 October 1998

Description Of Compliance with The Relevant Legislation, Policy, or Guideline:	
Legislation, policy or guideline	Description of compliance
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended)	Application for Environmental Authorisation.
National Water Act (Act No 36 of 1998).	A Water Use Licence Application (WUL) will be lodged.
National Environmental Management: Air Quality Act (Act No 39 of 2004)	Application to declare the CHP as a controlled emitter.
Gauteng Province Environmental Management Framework (GPEMF) (GN 164 of 02 March 2018).	There are project activities which falls within Zone 5 of the GPEMF that are exempted from obtaining an Environmental Authorisation. These activities will go through the registration process of the GPEMF as per the exclusion standards.
Draft Dolomite Risk Management Policy (2020)	A Dolomite Stability Report will be compiled prior to building plan approval. A Dolomite Risk Management Plan must be compiled by a competent person and submitted to the Council for Geoscience (CGS) for their approval. A competent person must also inspect the excavation during construction and submit a construction report to the CGS.
Construction Regulations (2014)	Contractors must comply with the Construction Regulations which lay out the framework for construction related activities.
Midvaal Municipality By-laws	The Project will ensure compliance with the following by-laws: Sanitation, Fire Safety, Water, Waste, Noise & Nuisance.
IFC Performance Standards (PS)	The IFC PS are the benchmark for all international project financing. <ul style="list-style-type: none"> ▪ PS 1: Assessment and Management of Environmental and Social Risks and Impacts;

Description Of Compliance with The Relevant Legislation, Policy, or Guideline:			
		<ul style="list-style-type: none"> ▪ PS 2: Labour and Working Conditions; ▪ PS 3: Resource Efficiency and Pollution Prevention; ▪ PS 4: Community Health, Safety, and Security; ▪ PS 5: Land Acquisition and Involuntary Resettlement; ▪ PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; ▪ PS 7: Indigenous Peoples; and ▪ PS 8: Cultural Heritage. <p>The IFC PS on Environmental and Social Sustainability form part of the IFC’s Sustainability Framework. The IFC requires its clients during all lending, borrowing or investments to apply these standards to manage environmental and social risks so that development opportunities are enhanced.</p>	
Compatibility of the IFC Performance Standards and South African Approval Route			
<p>The IFC PS represents the opportunity to ensure a bankable ESIA and subsequent third-party investment from lenders who are part of or signed up to these standards. The IFC PS do not conflict with South African Law, and the scope places a special emphasis on engagement, disclosure, and the consideration of key issues.</p> <p>Disclosure and consultation requirements ‘for the South African EIA’ process allow for public consultation including an approach that will ensure that the affected communities can participate in exchanging their views on the draft ESIA (Basic Assessment) Report produced.</p> <p>Therefore, consultation in accordance with South African Environmental legislation was conducted accordingly for the Project. Disclosure and consultation in accordance with IFC PS began early in the ESIA study and continued as risks and impacts arose. It was therefore necessary to plan and coordinate the two consultation processes to comply with both requirements. The information in Table 3 presents a condensed summary of the Project compliance requirements and commitments to the eight IFC PS.</p>			
Table 3: Project Compliance Requirements Against Eight IFC Performance Standards			
Performance Standard	Compliance	Commitment or Further Evidence Based Studies Required	Status Quo
PS 1: Assessment and Management of Environmental and Social Risks and Impacts	<ul style="list-style-type: none"> ▪ Environmental and Social Management System (ESMS) required ▪ Stakeholder engagement plan (SEP) required 	<ul style="list-style-type: none"> ▪ Development of ESMS and SEP ▪ Health and Safety Plan for construction phase 	<ul style="list-style-type: none"> ▪ ESMS pending ▪ SEP developed ▪ Health and Safety Plan pending
PS 2: Labour and Working Conditions	<ul style="list-style-type: none"> ▪ International Labour Organisation (ILO) 	<ul style="list-style-type: none"> ▪ Socio-economic impact assessment 	<ul style="list-style-type: none"> ▪ SEIA developed ▪ HR Policy pending

Description Of Compliance with The Relevant Legislation, Policy, or Guideline:			
	standards and commitment required	(SEIA) of all phases of the project required <ul style="list-style-type: none"> Contractor procurement and HR Policy for construction phase 	
PS 3: Resource Efficiency and Pollution Prevention	<ul style="list-style-type: none"> EHS guideline adherence and commitment to ESMS 	<ul style="list-style-type: none"> Pollution prevention and mitigation to be identified within ESIA 	<ul style="list-style-type: none"> ESIA developed
PS 4: Community Health and Safety Plan, and Security Plan	<ul style="list-style-type: none"> Vectors of disease and community exposure to be assessed 	<ul style="list-style-type: none"> Mitigation measures within the ESIA. Community Health and Safety Plan, and Security Plan to be compiled prior to construction phase (in pre-construction) 	<ul style="list-style-type: none"> ESIA developed Community Health and Safety Plan, and Security Plan pending
PS 5: Land Acquisition and Involuntary Resettlement	<ul style="list-style-type: none"> Evidence to be provided concerning land ownership/lease and engagement process 	<ul style="list-style-type: none"> Not applicable 	<ul style="list-style-type: none"> Agreement with Heineken to lease the land
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	<ul style="list-style-type: none"> Ecosystem impacts to be assessed and evaluated, with reference to ecosystem services 	<ul style="list-style-type: none"> Evidence led studies to inform the design and ensure mitigation measures are appropriated 	<ul style="list-style-type: none"> The study area is not located within a Critical Biodiversity Area, Ecological Support Area or a Protected Area (or within 5km of a Protected Area) The Project is situated with Zone 5 of the GPEMF (Industrial and Commercial Focus) From historical satellite imagery, it is apparent that the entire site was previously disturbed by mowing for the production of livestock fodder. A Vegetation Clearance Plan and

Description Of Compliance with The Relevant Legislation, Policy, or Guideline:			
			<p>Faunal Management Plan are included in the ESMP to manage any impacts to biodiversity</p> <ul style="list-style-type: none"> No Biodiversity Study developed
PS 7: Indigenous Peoples	<ul style="list-style-type: none"> Engagement should ensure early identification 	<ul style="list-style-type: none"> SEP to be developed (Although PS 7 not applicable to this project) 	<ul style="list-style-type: none"> Not Applicable
PS 8: Cultural Heritage	<ul style="list-style-type: none"> Assessment to be performed 	<ul style="list-style-type: none"> Literature review and site inspection with development of chance find procedures prior to construction phase 	<ul style="list-style-type: none"> Heritage Impact Assessment and Palaeontological Impact Assessment developed

1.5 ACTIVITIES APPLIED FOR

An application may be made for more than one listed or specified activity that, together, make up one development proposal. All the listed activities that make up this application must be listed below.

Indicate the number of the relevant Government Notice:	Activity No (s) (relevant notice): e.g., Listing notices 1, 2 or 3	Describe each listed activity as per the wording in the listing notices:
GN. R 327, 8 December 2014	Listing Notice 1 Activity 2	<p>The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where—</p> <p>i.the electricity output is more than 10 megawatts but less than 20 megawatts; or</p> <p>ii.the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.</p> <p><i>Applicable to the Combined Heat and Power generation system (4MW) using liquefied natural gas (LNG) and back-up boilers 2 x 6MW boilers using LNG.</i></p>
Added Activity as per the Department Comments (No 11) – 16 September 2024		
GN. R 327, 8 December 2014	<u>Listing Notice 1</u> <u>Activity 28</u>	<p><u>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</u></p> <p>i. <u>will occur inside an urban area, where the total land to be developed is bigger than 5 ha; or</u></p>

Indicate the number of the relevant Government Notice:	Activity No (s) (relevant notice): e.g., Listing notices 1, 2 or 3	Describe each listed activity as per the wording in the listing notices:
		<p>ii. <u>excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.</u></p> <p><u>Previous land use appears to have been agricultural.</u> <u>Activity is excluded from the requirement to obtain an EA within Zone 5 of the GPEMF Standard.</u></p>

1.6 ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. **Do not include the no go option into the alternative table below.**

Note: After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

Soufflet Group, the world's leading malt producer, operates more than 41 malting plants worldwide and is currently the biggest maltster in the world. Due to this great experience, the Soufflet Group has developed the know-how in process management to achieve high quality malt and to optimize energy consumption.

The main utilities required by the malt plant are electricity, water, compressed air, liquified natural gas (LNG) and cooling/heating systems. Electricity will be generated by the CHP genset while the heat generated through exhaust gases will be passed through heat pumps and heat exchangers to achieve high thermal efficiencies. Complementary heat energy will also be coming from the heat pumps in the form of cooling. This cycle, so called trigeneration, is the state of the art in term of energy optimization. Water for the malting process will be sourced from the local municipality.

From a socio-economic perspective, the Project is anticipated to bring direct and indirect benefits to the socio-economic environment. The likely benefits of the Project includes: job creation, business opportunities, revenue generation, provision of raw materials, and knowledge and technology transfer.

The socio-economic benefits coupled with the use of trigeneration technology and the location of the Project within an industrial park which is zoned for industrial use, as well as the siting of the Project in Zone 5 of the GPEMF (where certain activities in the EIA Regulations 2014 (as amended) are excluded from enquiring an environmental authorisation), highly supports the need and desirability of the Project, as proposed.

Provide a description of the alternatives considered

No.	Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other (provide details of "other")	Description
1	Proposal	Development of a new greenfield malt plant utilising a CHP (including back up system) with 8MW of heating energy, 4MW of cooling energy and 3MW of electrical power through the CHP plant, heat pumps and heat exchangers. Gas requirements for the CHP amount to approximately 150,000 Giga Joule (GJ).
2	Alternative 1	Development of a new greenfield malt plan utilising the Eskom grid for 6.5MW of electrical power and gas boilers for thermal heat generation. Average gas consumption of 300,000GJ.
3	Alternative 2	

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

Site/Location	<ul style="list-style-type: none"> ▪ The site/location for the Project is within the Graceview Business Park, which is strategically located next to the Heineken Sedibeng Brewery. The malt will be transported via conveyor to the brewery to reduce traffic and emissions. ▪ The site is within Zone 5 of the GPEMF. Zone 5 means the geographical area depicted as Industrial and Commercial Focus Zone in which non-polluting industrial and large-scale commercial developments are facilitated through the use of excluded activities of which a geographical representation can be found in Appendix 3 of the Standard. ▪ The Project is in close proximity to the national highway network (R59). ▪ There is existing access to the Project site. <p>No further site/location alternatives have been assessed.</p>
Technology	<p>Various scenarios were considered for the Project's energy requirements during the Feasibility Study.</p> <ul style="list-style-type: none"> ▪ The CHP will produce electricity that will be used by the heat pumps. ▪ CHP and heat pumps are commonly used in the malting activity and Soufflet Malt has extensive experience with these technologies. ▪ No need of extra energy for cooling since chilled water is a 'by-product' of a heat pump suitable for the activity.

	<ul style="list-style-type: none"> ▪ The local electrical network will not be unbalanced by the malting operation. ▪ Gas boilers will be used as a back-up system. The boilers are planned to be used only when required and will not be operated continuously. ▪ Solar PV may be considered in future to supplement the electrical supply in the event of a gas shortage. <p>No further technology alternatives have been assessed.</p>
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1.7 PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

		Size of the activity:
Proposed activity (<i>Total environmental (landscaping, parking, etc.) and the building footprint</i>)		10ha
Alternatives:		
Alternative 1 (if any)		10ha
Alternative 2 (if any)		

Ha/m²

or, for linear activities:

		Length of the activity:
Proposed activity		
Alternatives:		
Alternative 1 (if any)		
Alternative 2 (if any)		

m/km

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

		Size of the site/servitude:
Proposed activity		10 ha
Alternatives:		
Alternative 1 (if any)		10ha
Alternative 2 (if any)		

Ha/m2

1.8 SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	YES	
The site can be accessed via the R59 and R550 Provincial Roads. There is also an internal gravel road which leads to the site. The details are provided below.		
Main Access Road (270m in length)		
Start	26° 26' 03.79" S	28° 04' 17.62" E
Middle	26° 25' 59.47" S	28° 04' 16.92" E
End	26° 25' 55.33" S	28° 04' 17.65" E
If NO, what is the distance over which a new access road will be built		m
Describe the type of access road planned:		

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?	YES	
The site can be accessed via the R59 and R550 Provincial roads. There is also an internal gravel road which leads to the site. The details are provided below.		
Main Access Road (270m in length)		
Start	26° 26' 03.79" S	28° 04' 17.62" E
Middle	26° 25' 59.47" S	28° 04' 16.92" E
End	26° 25' 55.33" S	28° 04' 17.65" E
If NO, what is the distance over which a new access road will be built		m
Describe the type of access road planned:		

Include the position of the access road on the site plan. (If the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 2

Does ready access to the site exist, or is access directly from an existing road?	YES	NO
If NO, what is the distance over which a new access road will be built		m
Describe the type of access road planned:		

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated	1	Number of times
-----------------------------------	---	-----------------

(only complete when applicable)

Please note that the below Sections of the report will be relating to the Proposal and will not include Alternative 1 as they are both sited in the same location. The energy needs of both Proposal and Alternative 1 were not assessed further.

1.9 LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
 - A4 size for activities with development footprint of 10sqm to 5 hectares;
 - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
 - A2 size for activities with development footprint of >20 hectares to 50 hectares);
 - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
 - A0 = 1: 500
 - A1 = 1: 1000
 - A2 = 1: 2000
 - A3 = 1: 4000
 - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
 - Rivers and wetlands;
 - the 1:100 and 1:50 year flood line;
 - ridges;
 - cultural and historical features;
 - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g., 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;

- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

Please refer to Appendix A for Locality Map.

1.10 SITE PHOTOGRAPHS

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix. It should be supplemented with additional photographs of relevant features on the site, where applicable.

Please refer to Appendix B for Site Photographs.

1.11 FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

Please refer to Appendix C for Facility Illustration.

2. SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

- 1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
- 2) Indicate on a plan(s) the different environments identified
- 3) Complete Section B for each of the above areas identified
- 4) Attach to this form in a chronological order
- 5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route	"insert No. of duplicates"	Not Applicable
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Instructions for completion of Section B for location/route alternatives

- 1) For each location/route alternative identified the entire Section B needs to be completed
- 2) Each alternative location/route needs to be clearly indicated at the top of the next page
- 3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives	DisplayText cannot s	Not Applicable
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(complete only when appropriate)

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way

- All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
- All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route	N/A	(complete only when appropriate for above)
------------------------------	-----	--

Section B – Location/route Alternative No.	N/A	(complete only when appropriate for above)
--	-----	--

2.1 PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	
<ul style="list-style-type: none"> ▪ Kliprivier Business Park, No 1 De Man Road, Johannesburg. ▪ Portion 0 of Erf No. 244, Graceview. 	

2.2 ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Proposal:	Latitude (S):	Longitude (E):
Corner Point 1:	26° 25' 42.70" S	28° 04' 08.22" E o
Corner Point 2:	26° 25' 45.53" S	28° 04' 19.57" E
Corner Point 3:	26° 25' 55.33" S	28° 04' 17.92" E
Corner Point 4:	26° 25' 52.44" S	28° 04' 06.72" E

In the case of linear activities:

Main Access Road (270m in length)	Latitude (S):	Longitude (E):
Starting point of the activity	26° 26' 03.79" S	28° 04' 17.62" E
Middle point of the activity	26° 25' 59.47" S	28° 04' 16.92" E
End point of the activity	26° 25' 55.33" S	28° 04' 17.65" E

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached	N/A
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The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	R	0	9	8	7	0	0	0	0	0	2	4	4	0	0	0	0
ALT. 1	T	0	I	R	0	9	8	7	0	0	0	0	0	2	4	4	0	0	0	0
ALT. 2																				
etc.																				

2.3 GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5
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2.4 LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front
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2.5 GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

2.5.1 Local Geology and Soils

The surface geology of the study area is characterised by alluvium sands along the Klip River flood plain, ferruginous shale and quartzite (Vt) of the Timball Hill Formation and dolomite & chert (Vdm) of the Malmani Formation of the Pretoria and Chuniespoort Supergroups, of the Transvaal Sequence. The soils in the area fall within the Ab types. Soils associated with these groups typically entail: Ab - Freely drained, red and yellow, dystrophic/mesotrophic, apedal soils comprise > 40% of the land type (yellow soils < 10%). According to Soil Conservation Service (SCS) data for the Project area, the soils are divided into "Type C" soils. SCS curve number is a function of the ability of soils to allow infiltration of water, land use and the antecedent soil moisture condition.

Several geophysical/gravity, geological investigation and dolomite studies have been completed for the Project area in the effort to understand the sub-surface hydrogeology, structural geology, and stability. The results are provided below (refer to **Table 4**):

- Drilling revealed that the upper soil profile is underlain by a relatively thick horizon of transported and pedogenic material. The transported horizon comprises gravels and fragments of quartzite, dolomite, chert and shale within a reddish-brown silty clay matrix. The transported horizon was encountered to depths ranging between 4m and 10.5m below ground level.
- The identification of the transported horizon was better discernible from the core recovered from the rotary drilled boreholes whereas only chips/fragments of rock are recovered during percussion drilling.
- Evidence of residual dolomite and chert of the Malmani subgroup was encountered at depths ranging between 3m and 12m below ground level.
- Weathered altered dolomite (WAD), an insoluble and highly compressible material comprising manganese and iron, developed during the weathering of dolomite, was logged within the dolomite residuum during the percussion drilling.
- WAD was encountered in nine (9) boreholes at depths ranging from 6m to 31m except for PPBH04, PBH05 and PPBH09. Cavities were encountered in five (5) of the boreholes (PPBH02, PPBH09 - PPBH12).
- Highly to slightly weathered dolomite was encountered at depths ranging from 9m to 39m below existing ground level. Unweathered dolomite was encountered at depths ranging from 19m and 41m and is typically based on identification of the chips recovered and where penetration rates are greater than 3 minutes per meter.
- Correlation of the depth of intersection of the dolomite in the percussion and rotary core boreholes show that the highly to slightly weathered dolomite correlates well with the slightly weathered, very hard rock dolomite intersected in the rotary core boreholes at depths of approximately 12m and 27m.

Table 4: Summary of Rock Profiles from Drilling Tests

Geological Origin	Formation	Depth (m)	Description	Water Table
Transported material	Alluvium	0-7	Silty sand with subrounded quartzite gravels.	Out of 18 boreholes drilled, three boreholes had water rest levels (9.8m, 16.1m, 22.1m). The localised occurrence of the rest level measurements suggest that it does not represent a permanent groundwater level.
Residual shale	Residual /very soft shale	9,0 – 26,0	Layers of silt, carbonaceous shale	-

			and course sandstone.	
Intrusive Rocks	Syenite	12 – 15	Very soft syenite	-
Malmani subgroup, Chuniespoort Group	Residual chert and dolomite	8.1 - 53	Grey silty clay with chert. Dark grey, sandy silty with ward and minor highly weathered dolomite. No cavities encountered.	-
Malmani subgroup, Chuniespoort Group	Dolomite bedrock	14 - 60	Grey slightly weathered, hard rock at least 6m thick.	-

The residual gravity map of the site is characterised by deep and often broad lows edged by highs as shown in **Figure 5**. A comparison of the gravity survey and the percussion drilling results revealed that there exists a good correlation between the gravity high, which reflects shallow bedrock, and gravity low which reflects deep bedrock and/ or potential cavities. The gravity high is denoted by the purple and red tones and the gravity low by blue and green tones. A distinct indication of high density (potential shallow bedrock) and low density (potentially deeply weathered zones/deep bedrock and/or potential cavities).

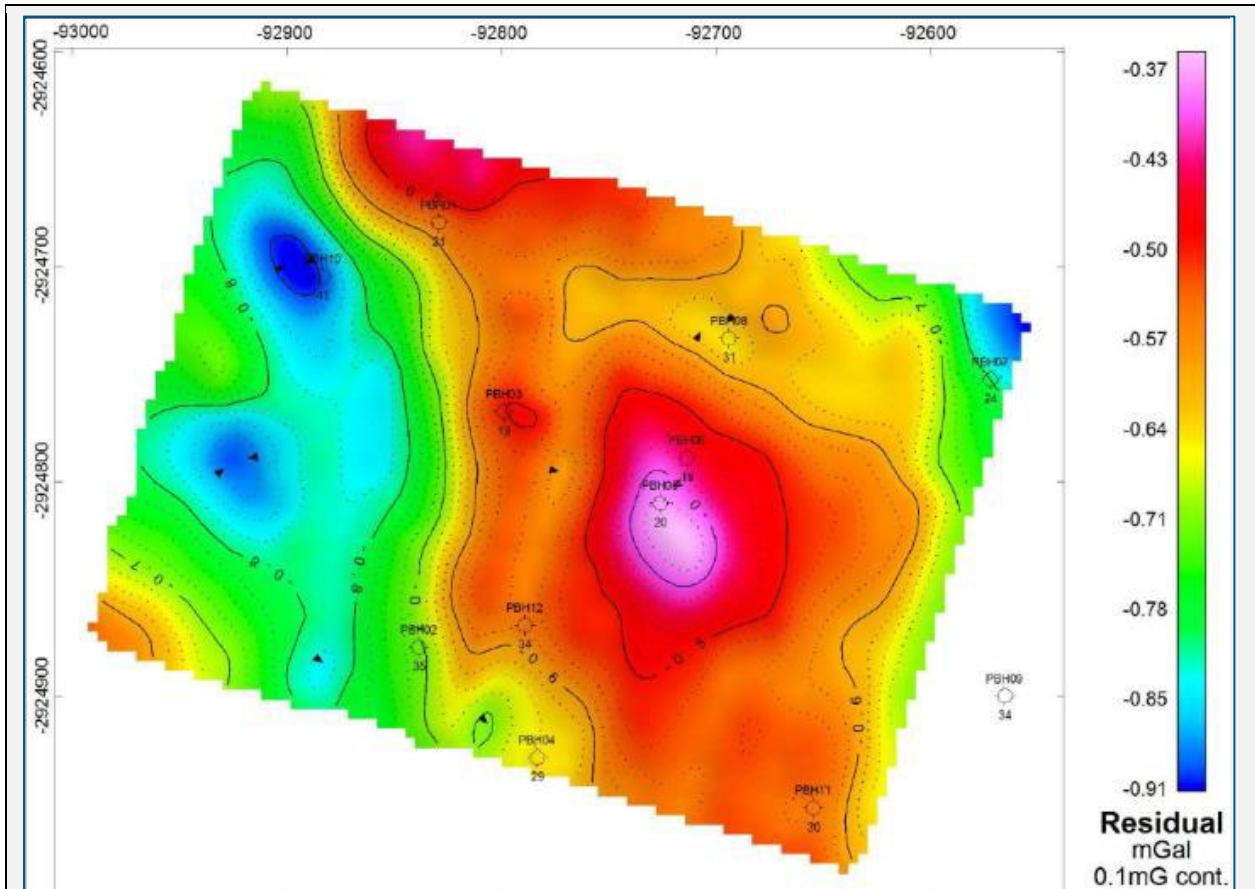


Figure 5: Combined 2014 and 2019 gravity survey results

2.5.2. Groundwater Quality

The groundwater quality for the region will be variable and will depend on the underlying geology and hydrogeology characteristics associated with groundwater recharge (i.e., older rock and aquifers with ion exchange will have higher electrical conductivity (EC), and recently recharged more permeable younger rocks will have lower EC). Literature and available hydrogeology maps for the area (**Figure 6**) suggest that the EC for the underlying aquifers generally ranges from 0 to 70mS/m (milli Siemens/meter). The pH for the region ranges from 6 to 8. Natural dolomitic groundwater is essentially a Ca/Mg ($\text{HCO}_3)_2$ type - alkaline. In-situ parameters measured on-site correspond to the literature ranges. This means that groundwater abstracted from the aquifer can generally be used for domestic and recreational use ¹. Where groundwater contributes to baseflow, similar water quality is expected.

¹ DWAF, 1996b. Water Quality Guidelines - Volume 1: Domestic Use, s.l.: s.n.

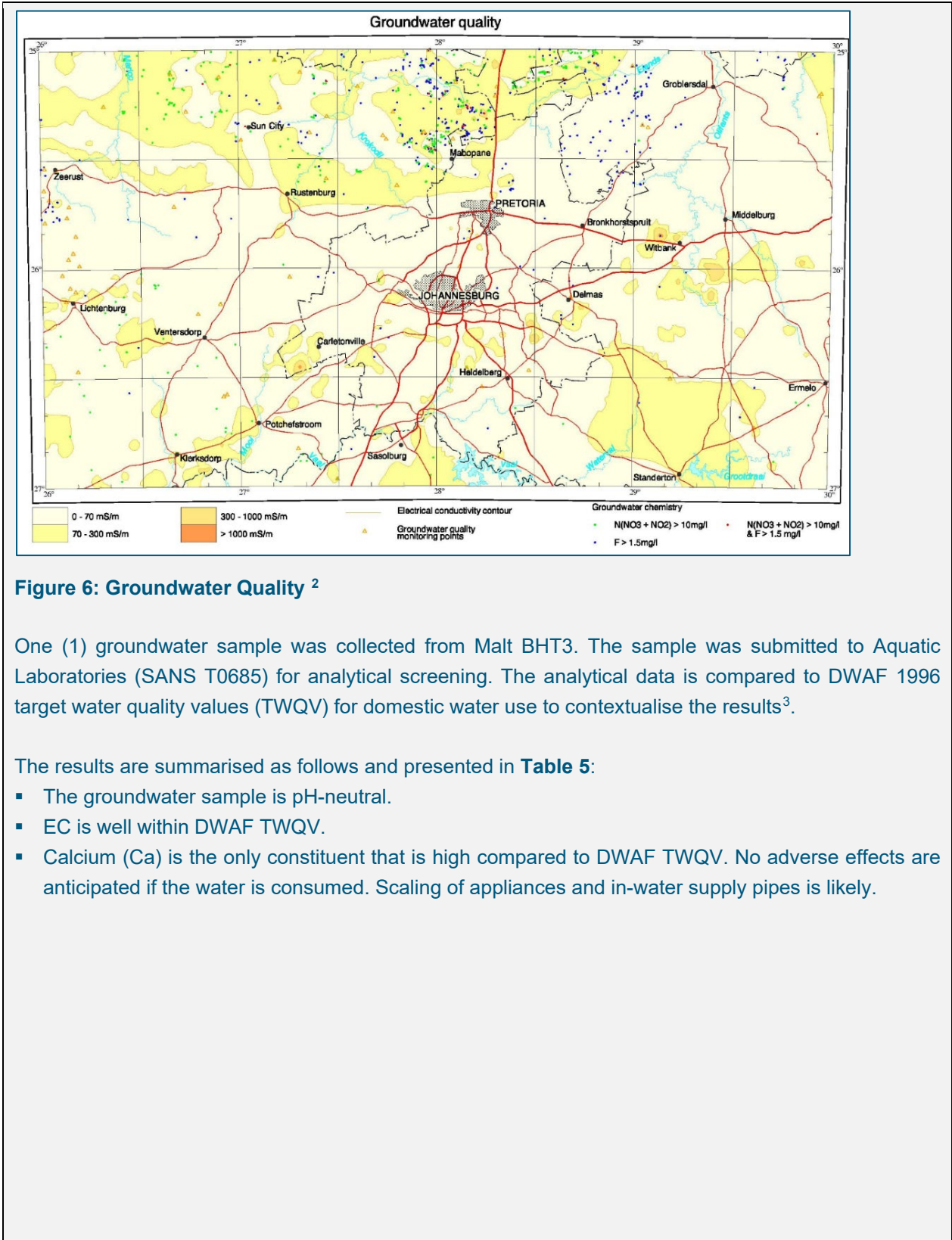


Figure 6: Groundwater Quality ²

One (1) groundwater sample was collected from Malt BHT3. The sample was submitted to Aquatic Laboratories (SANS T0685) for analytical screening. The analytical data is compared to DWAF 1996 target water quality values (TWQV) for domestic water use to contextualise the results³.

The results are summarised as follows and presented in **Table 5**:

- The groundwater sample is pH-neutral.
- EC is well within DWAF TWQV.
- Calcium (Ca) is the only constituent that is high compared to DWAF TWQV. No adverse effects are anticipated if the water is consumed. Scaling of appliances and in-water supply pipes is likely.

² King, G. M. E. a. J. F., 1998. 2526 Johannesburg - 1:500 000 Hydrological Map Series of the Republic of South Africa, s.l.: s.n.

³ DWAF, 1996b. Water Quality Guidelines - Volume 1: Domestic Use, s.l.: s.n.

Table 5: Summary of Hydrochemistry Data

Constituent	Unit	Malt TBH3	DWAF 1996 Domestic Use – TWQR
pH in water at 25°C	-	7.87	4 - 9
Conductivity in mS/m @ 25°C	mS/m	37.7	0 - 70
Bicarbonate Alkalinity as CaCO ₃	mg/l	211	ns
Total Alkalinity as CaCO ₃	mg/l	213	ns
Calcium	mg/l	47.3	0 - 32
Magnesium	mg/l	28.7	0 - 30
Potassium	mg/l	0.831	0 - 50
Sodium	mg/l	4.29	0 - 100
Chloride	mg/l	1.57	0 - 100
Nitrate	mg/l	2.77	0 - 6
Nitrate as N	mg/l	2.77	ns
Sulphate	mg/l	7.35	0 - 200
Aluminium	mg/l	<0.002	0 - 0.15
Iron	mg/l	<0.004	<0.1
Manganese	mg/l	0.007	<0.05
Orthophosphate (Total Reactive Phosphorous or PO ₄)	mg/l	0.347	ns
Sodium Adsorption Ration (SAR)	Calculated	0.12	>8

ns = No Quality Range in Reference Guideline, Orange = Above DWAF (1996) Ideal Water Quality Ranges

2.5.3 Groundwater Quantity

Data from relevant geohydrological databases, including the Groundwater Resource Directed Measures (GRDM), was obtained from the Department of Water and Sanitation and associated Aquiworx software⁴. The site falls within quaternary catchments indicated in **Table 6**. Reserve allocations retrieved from the DWS (2023) National Integrated Water Information System are presented in **Figure 7**. There is a surplus reserve observed for all sub-catchments associated with the Project area. Aquifers are therefore considered unstressed.

Table 6: Quaternary Catchment Associated with the Project⁵

Quaternary Catchment	Total Area (km ²)	Recharge (mm/yr)	Rainfall (mm/yr)	Baseflow (mm/yr)
C22D	345.3	58	700.5	13 [Pitman]

⁴ Aquiworx, 2015. Aquiworx Software Integrated Information, s.l.: s.n.

⁵ Aquiworx, 2015. Aquiworx Software Integrated Information, s.l.: s.n.

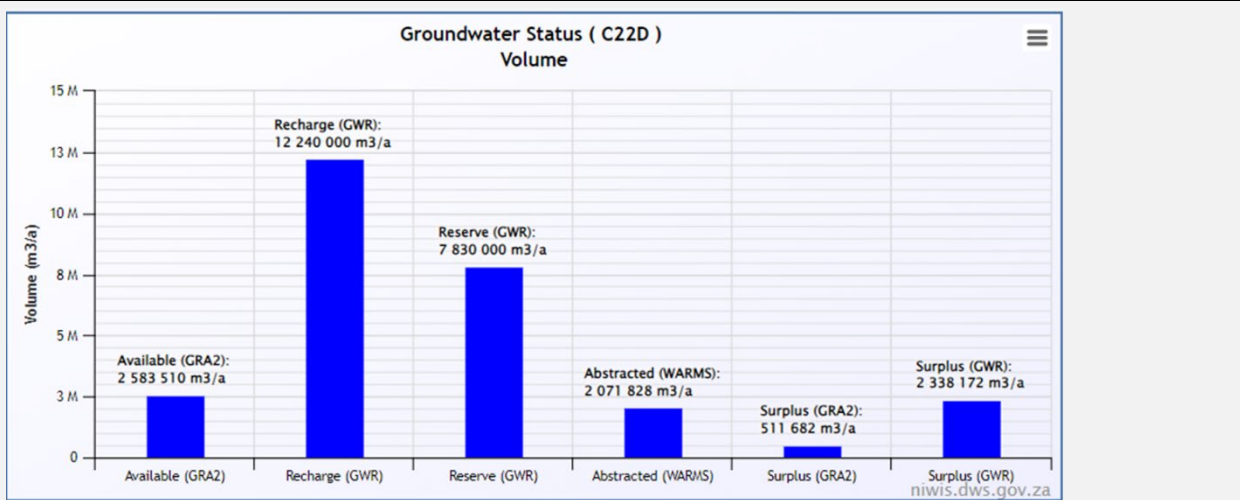


Figure 7: Summary of DWS Groundwater Reserve Allocations

- Existing Groundwater Usage (EU):** A volume of 2472.91m³/day is allocated to the water balance. The allocation is based on WARMS data for boreholes (verified or unverified) that fall in the GW Hydrological Response Unit (HRU).
- Basic Human Needs (BHN):** BHN was calculated from a reduced population from the quaternary to sub-catchment scale. BHN is assumed to also be further supplemented by the EU for boreholes that fall in the sub-catchment.
- Proposed Groundwater Usage (PU):** The PU is based on the likelihood that there will be a combined volume of 300m³/day pumped from Malt BHT3 and Malt BHT4. It should be noted that the definite usage of the boreholes is yet to be confirmed, and only included to evaluate the potential risks associated with the proposed activity.
- Land Use (LU):** Based on 2021 South African National Land Cover data for the sub-catchment sub-limited urbanisation occurs in the sub-catchments (largely natural⁶). Hence, the impact of land use on net groundwater recharge will be low.
- Groundwater Balance:** The reserve determination for the sub-catchment associated with the Project is summarized in **Table 7**. A surplus reserve for the GW HRU is noted.

⁶ DFFE, 2021. South African National Land Cover (SANLC) 2020 data, *South Africa: DEA on 1st October 2021*.

Table 7: Groundwater Reserve Determination for the Sub-catchment Area

GW HRU01		
Area	59.23	km ²
Rainfall	642.60	mm/yr
BF	13.23	mm/yr
Aquifer Recharge		
Re	50.77	mm/yr
Re to Aquifer	3 006 928.97	m ³ /yr
Re %	7.90	%
Existing Use (EU)		
WARMS 2024	2472.91	m ³ /day
Total EU Day	2472.91	m ³ /day
Total EU Year	902611.88	m ³ /yr
Basic Human Needs		
BHN	0.00	m ³ /day
BHN	0.00	m ³ /yr
Base Flow		
BF	783639.36	m ³ /yr
Available	1320677.73	m ³ /yr
Proposed Use (PU)		
Malt BHs	300.00	m ³ /day
		m ³ /day
Total PU Day	300.00	m ³ /day
Total PU Year	109500.00	m ³ /yr
Nett Balance	1211177.73	m ³ /yr

2.5.4 Freshwater

Based on the site verification undertaken by the Freshwater Specialist, it was confirmed that no natural freshwater ecosystems occur within the study or investigation area. Due to the closest freshwater ecosystem being greater than 500m distance from the study area, no Zones of Regulation, or the required GDARD 100m riparian/50m wetland buffer will apply to the study area and proposed development, nor would the development be subject to a Water Use Authorisation in terms of Section 21 c and i of the National Water Act (Act No 36 of 1998). The proposed Project poses no significant quantum of risk to existing freshwater ecosystems in the area and therefore no risk assessment is required in accordance with GN4167 of 2023.

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)		NO
Dolomite, sinkhole or doline areas	YES	
Seasonally wet soils (often close to water bodies)		NO
Unstable rocky slopes or steep slopes with loose soil		NO
Dispersive soils (soils that dissolve in water)	YES	
Soils with high clay content (clay fraction more than 40%)		NO
Any other unstable soil or geological feature		NO
An area sensitive to erosion		NO

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s)		NO
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Latitude (S):	Longitude (E):	
°	°	

c) are any caves located within a 300m radius of the site(s)		NO
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Latitude (S):	Longitude (E):	
°	°	

d) are any sinkholes located within a 300m radius of the site(s)		NO
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Latitude (S):	Longitude (E):	
°	°	

If any of the answers to the above are “YES” or “unsure”, specialist input may be requested by the Department.

2.6 AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?		NO
The Project is located within an urban area within the Graceview Industrial Park. The Project is within Zone 5 (Industrial and Commercial Focus Zone) of the GPMEF and therefore the development of the Project will not have an unacceptable negative impact on the agricultural production capability of the Project study area as the land is currently not being used for agricultural activities.		

In addition, the development does not need an agricultural assessment because it is not viable agricultural production land. The limitation for agricultural production is not biophysical in nature but related to land use planning and zoning. The agricultural impact is by definition, a change to the agricultural production potential of agricultural land. Thus, since this not an agricultural land no impacts exist. [Statement from the Agricultural Specialist (SOILS-ZA) consulted by the EAP]. Thus, no further assessment is being conducted for the Agriculture.

Please note: The Department may request specialist input/studies in respect of the above.

2.7 GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

The Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool has indicated that a small portion of the western section as Medium due to the possible presence of Mammalia - *Hydrictis maculicollis* (spotted-necked otter) with the majority of the site has been classified as a Low sensitivity. The Project is located in an urban area within the Graceview Industrial Park and the likeliness of the *Hydrictis maculicollis* being present on site is considered unlikely due to the transformed nature of the site and with the closest riparian habitat located approximately ~1km away from the site separated by an access road bordering the Kliprivier Business Park and Graceview Industrial Park.

In addition, a Site Sensitivity Verification was conducted for the Project and it was determined that the site is classified as a Low Sensitivity due to it being located in an urban area within the Graceview Industrial Park. Thus, no further assessment will be conducted for the Animal, Plant and Terrestrial Biodiversity Themes.

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % =	Natural veld with scattered aliens % =	Natural veld with heavy alien infestation % =	Veld dominated by alien species % = 100	Landscaped (vegetation) % =
Sport field % =	Cultivated land % =	Paved surface (hard landscaping) % =	Building or other structure % =	Bare soil % =

The vegetation within the study area is predominantly herbaceous, and support species typically associated with secondary/disturbed grassland. Dominant species identified during the site visit include *Aristida congesta* subsp. *congesta*; *Cynodon dactylon*; *Eragrostis curvula*; *Hyparrhenia* spp.; *Melinis repens*; *Nidorella resedifolia*; *Pogonarthria squarrosa*; *Sporobolus africanus* and *Trichoneura grandiglumis*. No plant species typically associated with permanent or temporary wet conditions (hydrophytes) were observed. From historical satellite imagery, it is apparent that the entire site was previously disturbed by mowing for the production of livestock fodder. Within the greater investigation

area, the vegetation is also indicative of previous disturbance, the most recent being the construction activities associated with the new road south of the study area, which has recently been completed. Alien Invasive Plants (AIPs) were found in low to medium abundance at the time of the site visit and included *Bidens pilosa*; *Conyza* spp.; *Seriphium plumosum*; *Solanum sisymbriifolium*; *Tagetes minuta* and *Verbena bonariensis*.

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site		NO
If YES, specify and explain:		

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.		NO
If YES, specify and explain:		

Are there any special or sensitive habitats or other natural features present on the site?		NO
If YES, specify and explain:		

Was a specialist consulted to assist with completing this section		NO
If yes complete specialist details		
Name of the specialist:		
Qualification(s) of the specialist:		
Postal address:		
Postal code:		
Telephone:		Cell:
E-mail:		Fax:
Are any further specialist studies recommended by the specialist?		YES
If YES, specify:		NO
If YES, is such a report(s) attached?		YES
If YES list the specialist reports attached below		NO
Signature of specialist:		Date:

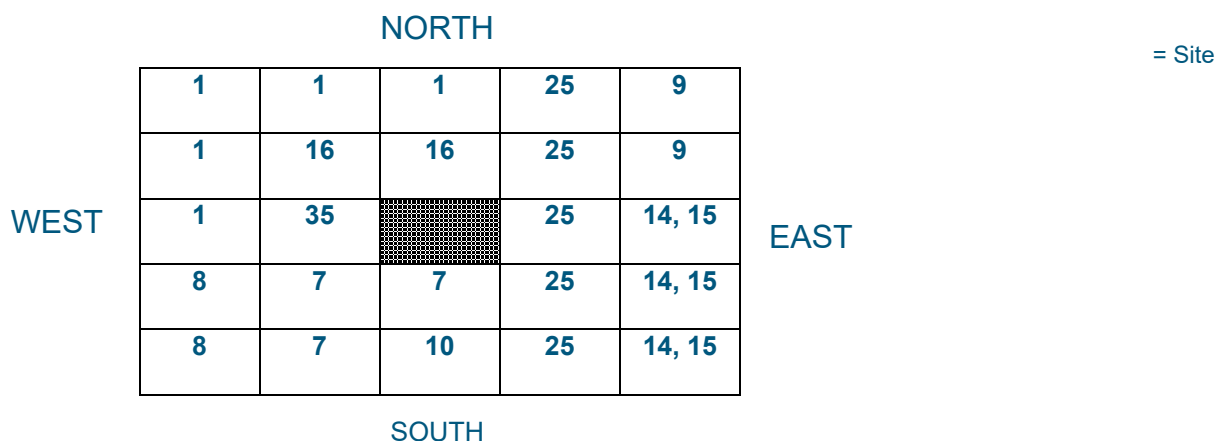
Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated.

2.8 LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial ^{AN}	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport ^N	23. Train station or shunting yard ^N	24. Railway line ^N	25. Major road (4 lanes or more) ^N
26. Sewage treatment plant ^A	27. Landfill or waste treatment site ^A	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33. Spoil heap or slimes dam ^A	34. Small Holdings	
Other land uses (describe):	35. Solar PV Plant			

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks



Note: More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at

health & air quality and noise impacts may be required for any feature above and in particular those features marked with an “A” and with an “N” respectively.

Have specialist reports been attached	YES
If yes indicate the type of reports below	
<ul style="list-style-type: none"> ▪ Geohydrology Assessment. ▪ Hydrology Assessment. ▪ Noise Assessment. ▪ Traffic Assessment. ▪ Heritage Impact Assessment. ▪ Paleontological Assessment. ▪ Socio-economic Assessment. ▪ Air Quality Impact Assessment. ▪ Climate Change Assessment. ▪ Aquatic Biodiversity Compliance Statement. <p>A Site Sensitivity Verification Exercise was conducted for the Project which determined what assessments would be required for the Project. The Site Sensitivity Verification Exercise is presented in Appendix I.</p>	

2.9 SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

2.9.1 Sedibeng District Municipality (SDM)

The Sedibeng District Municipality (SDM) is a Category C municipality located on the southern tip of the Gauteng Province, strategically positioned at the intersection of the Free State, North West, and Mpumalanga provinces. This unique location, combined with its positioning on the banks of the Vaal River and Vaal Dam, encompasses the area formerly known as the Vaal Triangle. Sedibeng is situated a short distance from Johannesburg along the scenic Vaal, Klip, and Suikerbos Rivers.

Covering an area of 4,173km², the Sedibeng District includes the cities and towns of De Deur/Walkerville, Devon, Eikenhof, Evaton, Heidelberg, Meyerton, and more. The main economic sectors are manufacturing (30.8%), government (17.8%), business services (17.8%), and trade (13.7%). The municipality consists of the Emfuleni, Lesedi, and Midvaal Local Municipalities. The name "Sedibeng" means "the place of the pool" in Sesotho, referring to the water sources such as the Vaal River, Suikerbosrand River, Klip River, and Vaal Dam. The Vaal River, a primary water source for Gauteng and beyond, is crucial to the economic heartland of South Africa. The district's strategic location, bordered by the Free State to the south, Mpumalanga to the east, and North West to the west, makes it a vital hub for inward and outward migration, impacting the surrounding districts of Gert Sibande (Mpumalanga), Fezile Dabi (Free State), and Dr. Kenneth Kaunda (North West).

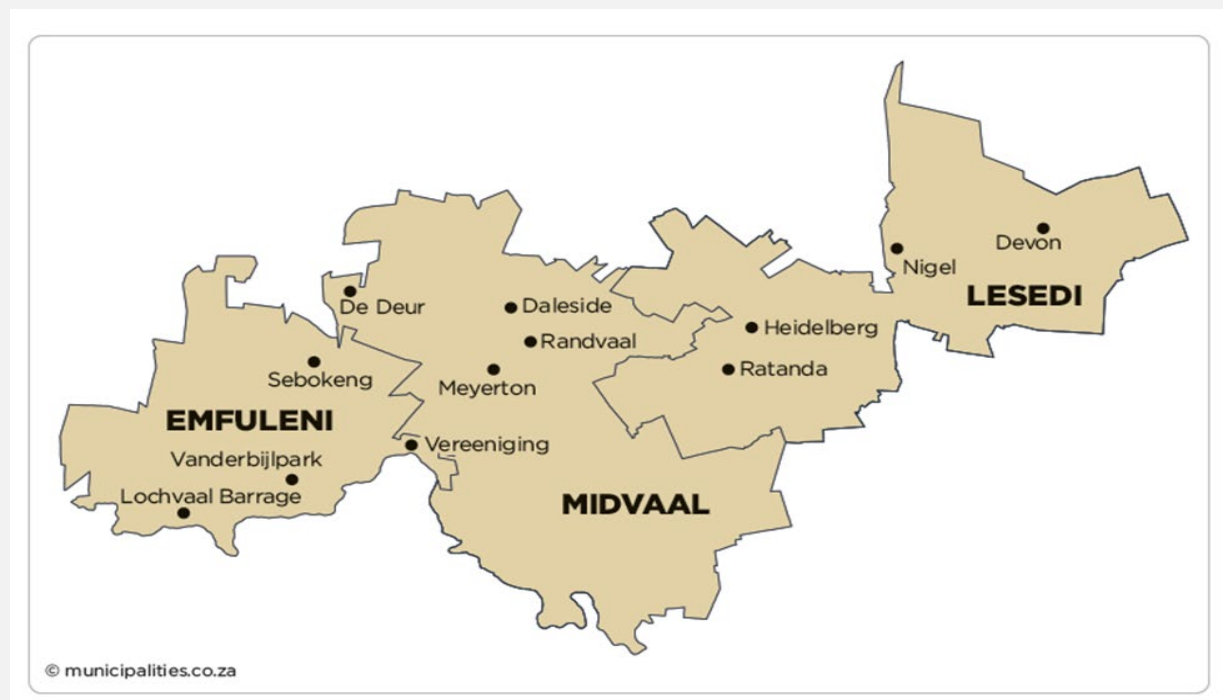


Figure 8: Sedibeng District Local Municipalities

2.9.2 Sedibeng Population

The SDM is home to 1,190,688 people, contributing 1.8% to South Africa's total population. The population was 717,055 in 1996, increased by 10.8% to 794,559 in 2001, and further grew by 15.3% to 916,484 in 2011. From 2011 to 2022, Sedibeng's population saw an overall increment of 29.9%, reaching

1,190,688. Black Africans constitute the largest proportion of Sedibeng’s population at 88.4%, followed by Whites at 9.7%, and Coloureds at 1.0%.

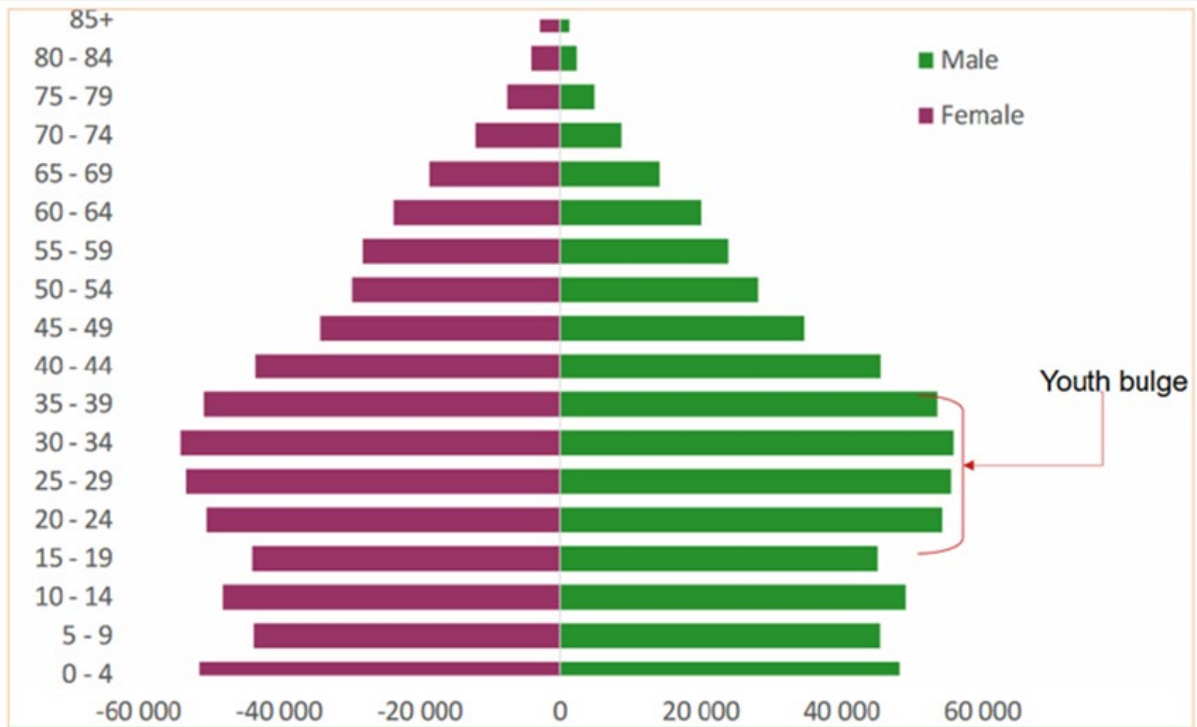


Figure 9: Population Pyramid for SDM, 2022

Understanding age groups is crucial in demographic assessments as the population's age structure directly indicates the long-term demand for community and social services, housing, and infrastructure. The population pyramid reflects four age categories: preschool population, school population, economically active population, and the elderly population (**Figure 9**).

Table 8: Age Groups Census, 2001 and 2022

Age group	0-4	5-14	15-34	35-60	60+
2011	89564	142847	345678	263568	74826
2022	99594	186362	412352	371878	120467

Source: Census 2022

The 20 to 65-year age cohort is particularly significant, with the male-female ratio in this group serving as an important indicator (**Table 8** and **Table 9**). Male absenteeism or a male surplus can be a proxy for migrant labour. A surplus of males might indicate an area attracting migrant labour, signalling higher expectations for economic growth and job creation.

Table 9: Population Distribution by Gender, 1996 - 2022

	1996	2001	2011	2016	2020	2022
Males	355,119	391,697	455,272	478,307	533,855	590 983
Females	361,080	404,009	461,051	479,221	519,178	599 705
Population density (persons/ha)	1.27	1.91	2.20	2.29	2.53	2.85
Total Population	716,199	795,706	916,324	957,528	1,055,070	1,190,688

Population groups, while not central to development analysis, help explain current dynamics based on historical settlement patterns. Sedibeng's population structure shows the largest cohort comprises people aged 35 to 64, followed by the 15-34 years cohort. The 0-14 age group also represents a relatively high share of the population. However, the region's dependence on a limited number of economic sectors limits its ability to absorb the youth bulge, resulting in fewer economic opportunities for most of the population.

Table 10: Population Groups

	1996	2001	2011	2016
Black	555,126	649,881	748,543	773,736
White	143,974	130,148	143,347	161,753
Coloured	6,810	8,863	11,027	12,388
Indian	5,639	6,814	9,113	9,651

Since the COVID-19 outbreak, mortality rates have risen across the region, affecting life expectancy and migration patterns. These changes are expected to shift the population structure. Such demographic changes due to the pandemic should be considered when implementing future health, economic development, and social welfare policies in the country and all its regions.

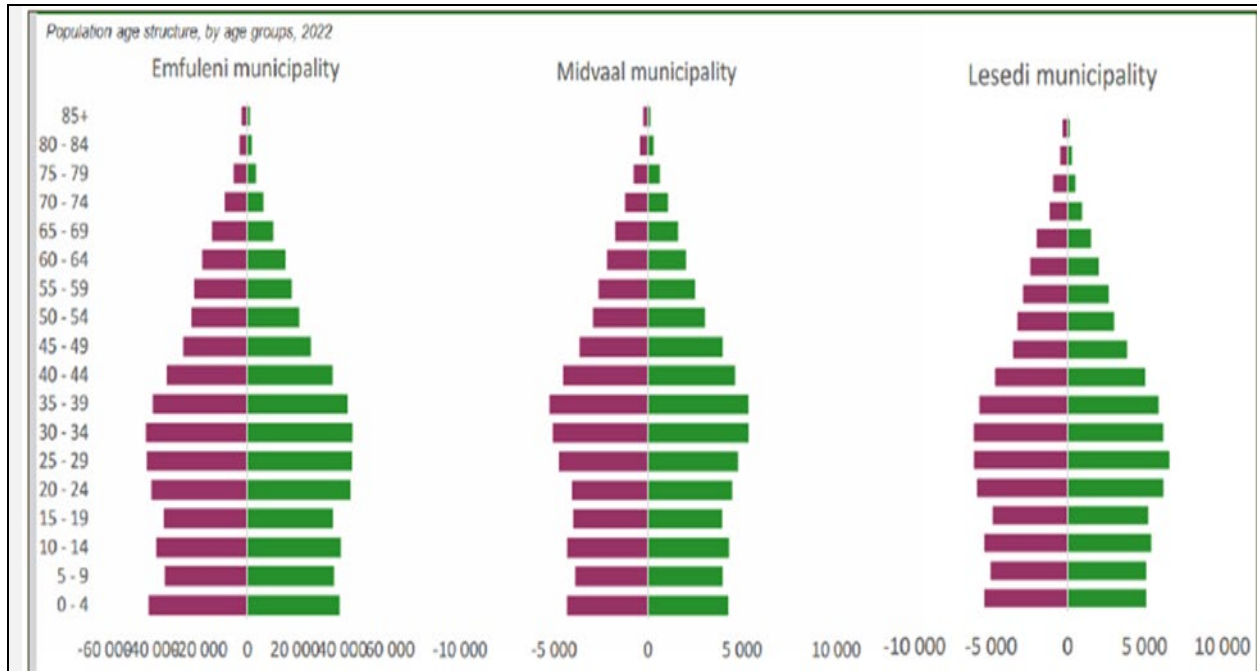


Figure 10: Population Pyramid by Local Municipality in SDM, 2022

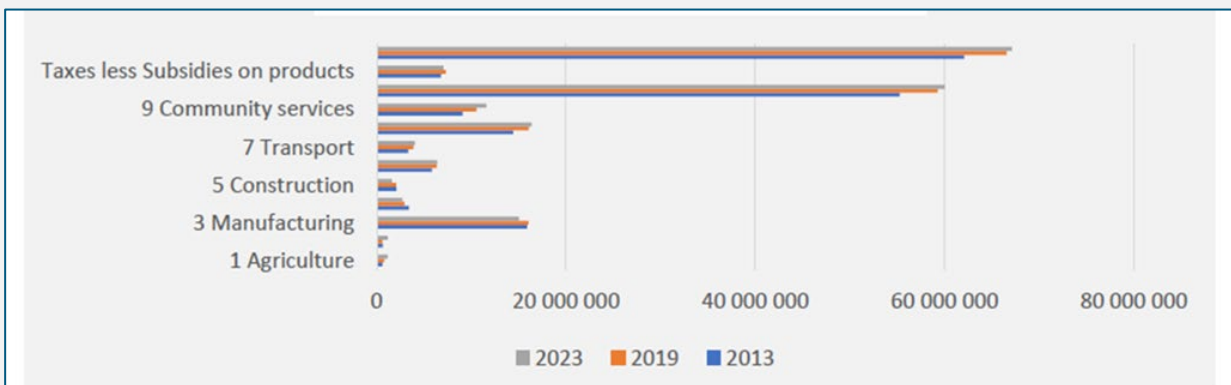
In 2022, the total district population exceeded 1 million. Emfuleni accounted for the largest share at 76.6%, followed by Lesedi at 12%, and Midvaal at 11.4%. Between 2019 and 2021, Lesedi and Midvaal experienced the highest average population growth rates, at 2% and 1.9% respectively (**Table 10** and **Table 11**).

Table 11: SDM and Local Municipalities Population

Population size					
Municipality	2016	2019	2021	2022	2023
Sedibeng	982,424	1,032,833	1,063,790	1,081,355	1,099,827
Emfuleni	758,757	793,083	815,150	828,275	842,351
Midvaal	109,931	117,609	121,777	123,791	125,753
Lesedi	113,736	122,142	126,863	129,290	131,723
Average growth					
Municipality	2004-2008	2009-2013	2014-2018	2019-2021	2022-2024
Sedibeng	1.5%	1.7%	1.6%	1.6%	1.7%
Emfuleni	1.0%	1.2%	1.3%	1.4%	1.7%
Midvaal	3.8%	3.6%	2.6%	1.9%	1.6%
Lesedi	3.5%	3.8%	2.6%	2.0%	1.9%

2.9.3 Sedibeng Economy

Sedibeng is the fourth-largest contributor to the Gauteng economy. A significant component of the Gross Value Added (GVA) in the SDM is comprised of the secondary sector, followed by the tertiary sector, and lastly the primary sector. The GVA indicates which sectors contribute the most value to the district's economy (**Figure 11**).



Source: Quantec Easy Data 2023

Figure 11: Gross Value Added by Region (GVA-R) Constant 2021 Prices

Despite a decline in its contribution over the years, the manufacturing sector remains a key driver of economic activity in Sedibeng. However, due to its heavy reliance on this sector, the district and its regions are vulnerable to national issues such as electricity supply constraints, labour unrest, and weak external and domestic demand.

The agriculture sector has demonstrated improved growth, increasing from 3.6% over the past ten years to 6.8% in the SDM region, with an average annual growth rate of 0.7% in terms of GVA. The mining sector has experienced fluctuations, with a growth rate of 4.8% in 2013 and a positive growth rate of 12.1% in 2023. Conversely, the manufacturing sector is in decline, with an average annual growth rate of -0.7% for SDM. This decline is concerning when compared to the 2.4% growth rate in Gauteng. The construction sector has also declined, albeit at a lower rate, with an annual rate decrease of 0.3% in all areas within SDM.

The service sectors, including trade, transport, finance, and community services, have shown relatively high growth rates over the last ten years, with growth rates between 3.9% and 4.8% for all service sectors, except for community services, which grew at an average rate of 2.1% in the SDM area (**Figure 12**).

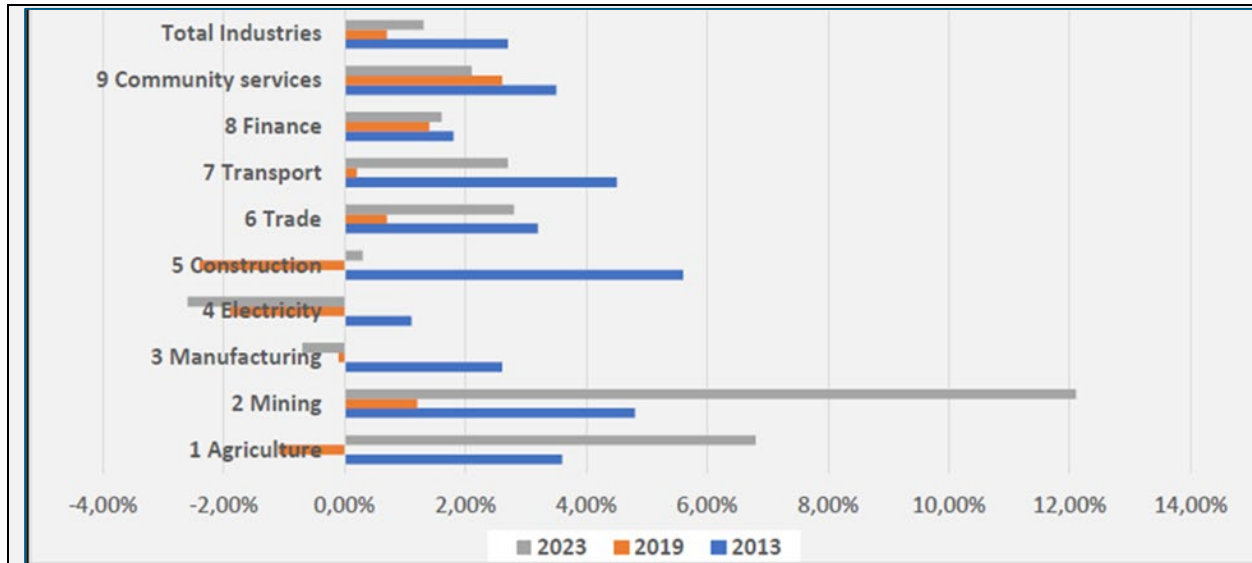


Figure 12: Average Annual Growth

The presence of manufacturing in Sedibeng, which accounted for 2.6% of economic activity in 2013, has declined to 0.7% in 2023. In fact, the manufacturing, electricity, and construction sectors (secondary sector) together accounted for a combined 9.3% of economic output. The primary sectors of mining and agriculture were at 4.8% and 3.6% in 2013, respectively, and have grown to nearly 29% in 2023. Within the district, agriculture and mining activities are relatively prominent, accounting for 12.2% and 6.8% of economic activity in 2023 (Figure 13).

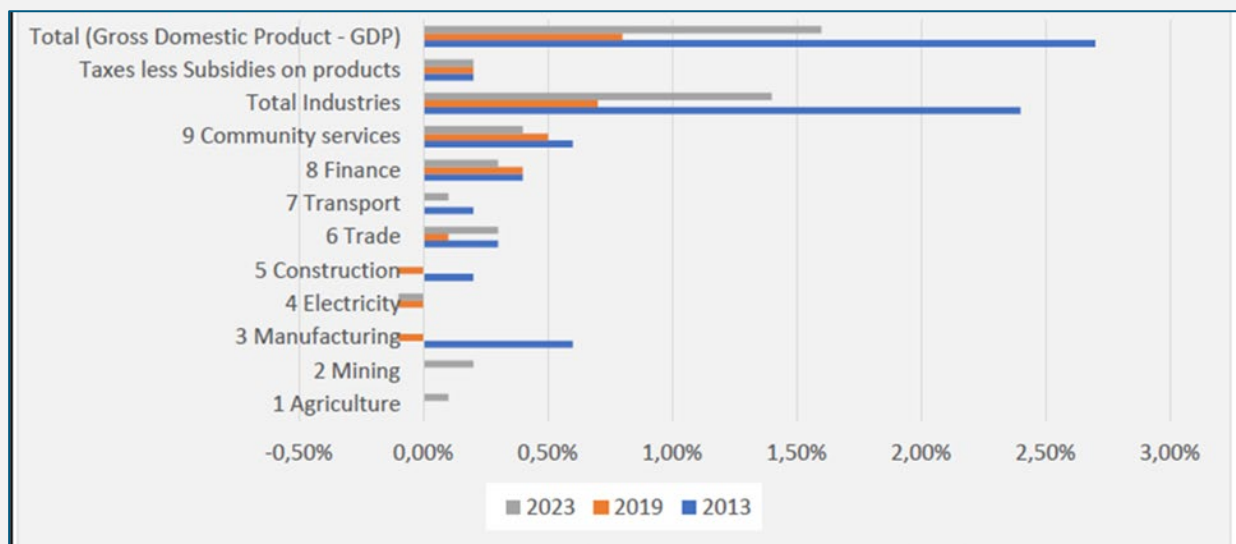
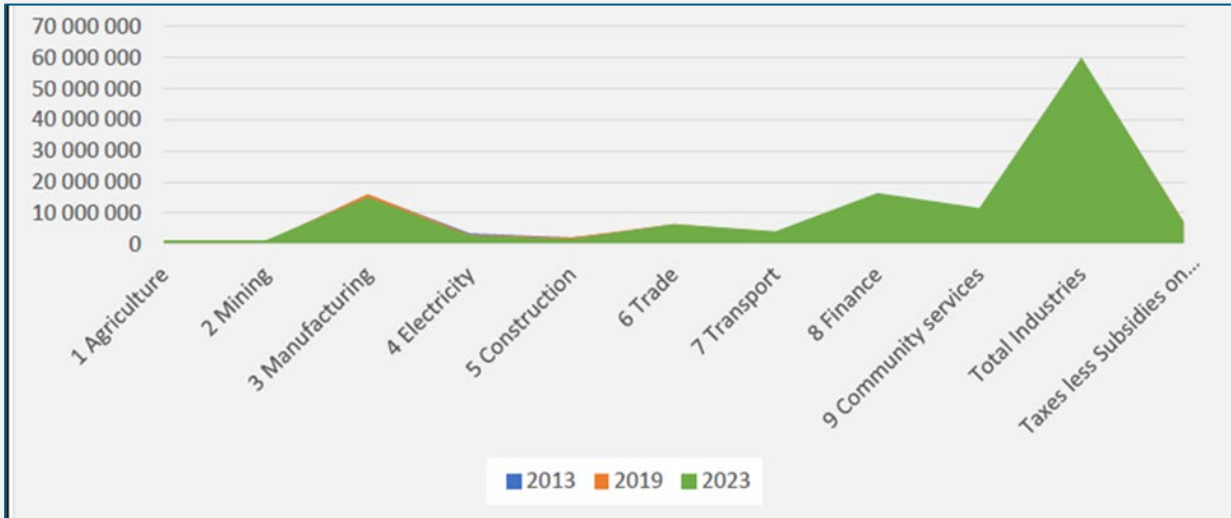


Figure 13: Contribution to Total Economic Growth

This composition of current economic activity underlines the need for the diversification approach detailed in the Local Economic Development strategy of the district. The economic growth disaggregation presented here highlights that the secondary sector, led predominantly by manufacturing and processing

activities, remains the largest contributor to the district's economic activity. The tertiary sector includes personal services and the retail sector.



Source: 2023 Quantec Easy Data

Figure 14: Economic Performance by Region

In 2023, economic activity in the district and its regions stabilized after a volatile 2022, with growth in the first quarter followed by a decline in the second, and then growth in the third quarter. Output growth in the district was 2.3% in the first quarter, decreased by 1% in the second quarter, and rose by 1.3% in the third quarter (**Figure 14**).

2.9.4 Sedibeng Employment and Unemployment

The aftermath of lockdowns and COVID-19 has severely impacted the labour market in Sedibeng. Many businesses closed, the number of discouraged work-seekers increased, and movement restrictions led to the labour participation rate reaching its lowest levels. Despite a return to positive economic growth in 2021, employment levels remained weak across several sectors. Although there was a slight decline in the unemployment rate and an increase in the number of people employed in the second and third quarters of 2022, this did not significantly affect the overall unemployment rate, which remains relatively high. Power outages in the last quarter of the year likely reversed all gains, making it difficult for businesses to remain viable.

The long-term challenge of low employment growth in the country has been associated with low economic growth over the past few years. Even during periods of higher growth, the tertiary sector exhibited low labour absorption rates. Moreover, employment growth lagged behind economic activity growth. For example, in 2021, while economic activity in the district rose by 4.5%, employment growth declined by 3.6%.

However, new mining activities in the region led to a significant increase in employment within that sector, growing by over 134% in 2022. Conversely, the largest job losses occurred in the electricity and

manufacturing sectors, with employment growth declining by 22.4% and 22.5%, respectively, in 2022 (Figure 15).

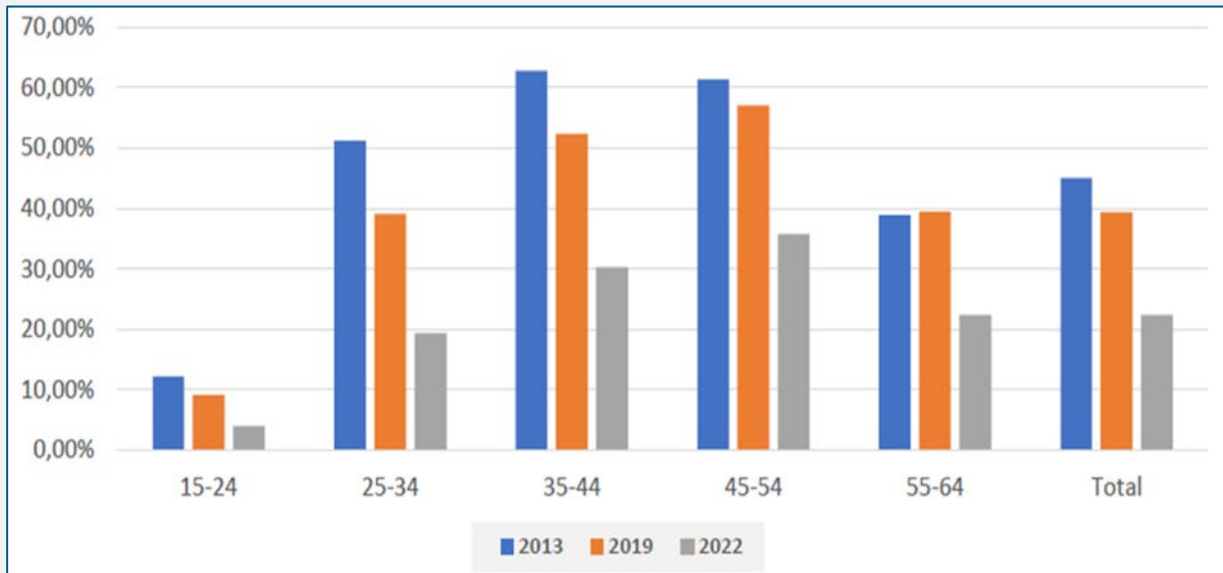
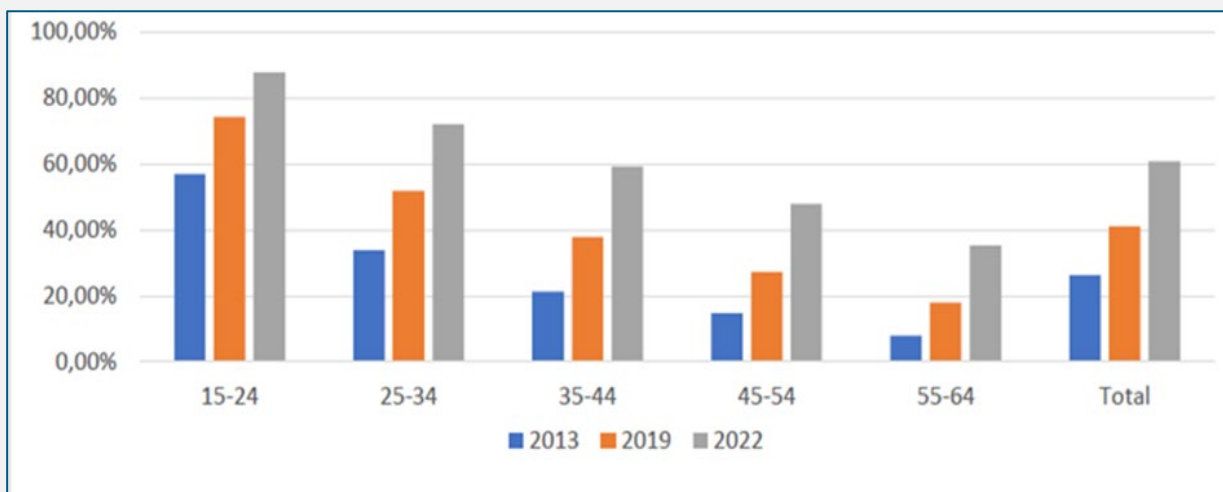


Figure 15: Labour Absorption Rate

In 2022, the overall unemployment rate was 60.8%, a reduction of 2% from 62.3% in 2021, but a significant increase from 41.1% in 2019. Among those unemployed, 87.7% were in the 15-24 age cohort in 2022, up from 74.3% in 2019 (Figure 16).



Source: 2023 Quantec Easy Data

Figure 16: Unemployment Rate (%)

In Sedibeng, while the unemployment rate stood at 60.8% in 2022, the trade sector provided the largest number of jobs but was still performing below pre-pandemic levels. Similarly, the manufacturing sector,

which was previously dominant in the region, has not recovered to its 2019 levels. This stagnation in key sectors does not bode well for employment creation in the district.

2.9.5 Sedibeng Education

The educational attainment in Sedibeng and its three local municipalities has seen notable improvements. The **Figure 17** illustrates the highest educational attainment levels. Notably, four out of ten persons aged 20 years and above have completed Grade 12/Matric. The number of individuals achieving this level of education increased significantly by 21.7%, from 19.6% in 2011 to 41.3% in 2022. Additionally, the number of individuals with postgraduate qualifications increased by 6%, from 7.2% in 2011 to 13.2% in 2022 (**Figure 17**).

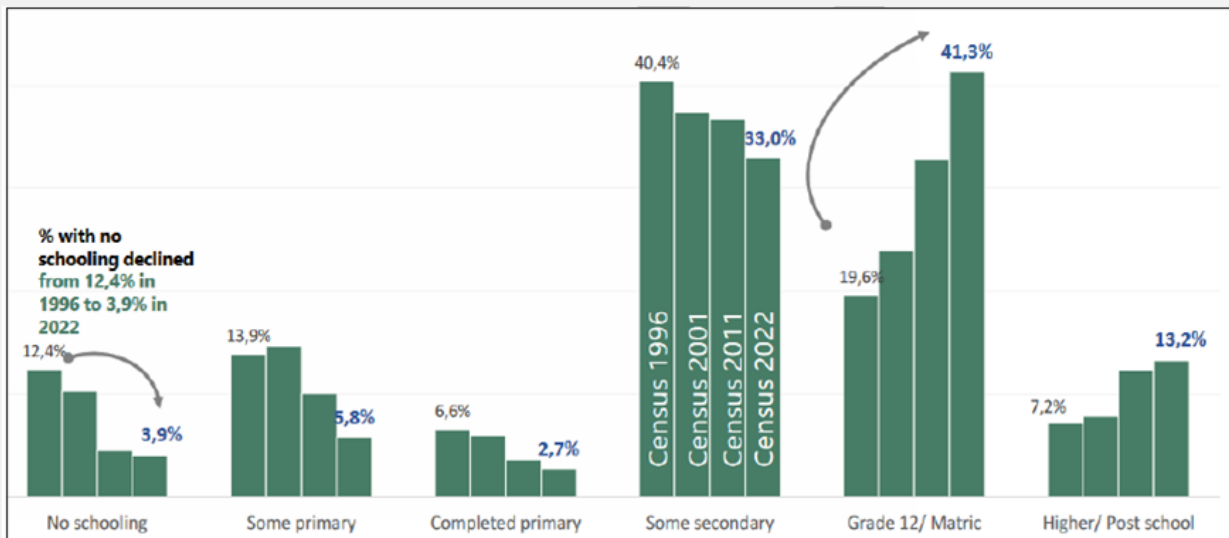


Figure 17: Education Attainment

The proportion of individuals with no schooling has significantly declined from 12.4% in 1996 to 3.9% in 2022. Similarly, the percentage of those who completed primary school has decreased by 3.9%, from 6.6% in 1996 to 2.7% in 2022, as depicted in **Figure 17**.

2.9.6 Sedibeng Human Development Index

Human Development Index (HDI) combines three fundamental aspects of human development: longevity, education, and standard of living. The HDI for both the district and its local regions has shown an increasing trend from 2004 to 2020 (**Figure 18**). This positive trend is attributed to improvements in educational attainment and life expectancy, as more people gained access to healthcare.

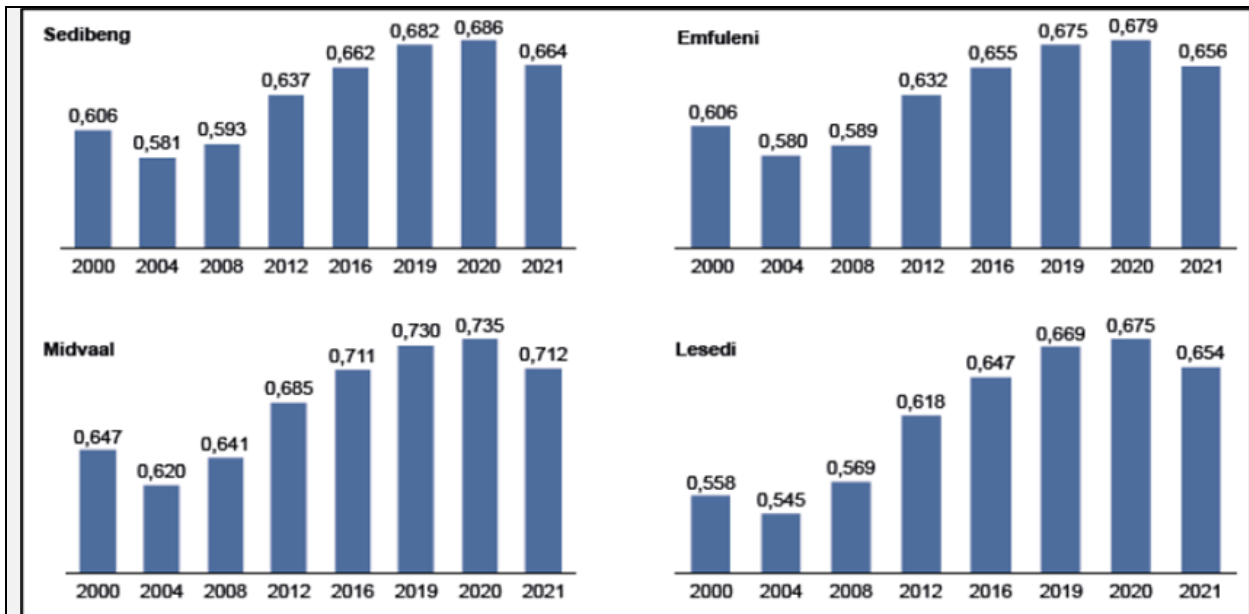


Figure 18: HDI for SDM and the Local Municipalities

In 2020, Emfuleni had an HDI of 0.679, which declined to 0.656 in 2021. Similarly, Midvaal's HDI was 0.735 in 2020, decreasing to 0.712 in 2021. These changes reflect variations in the underlying indicators that comprise the HDI and highlight the ongoing challenges and progress in human development within the district.

The establishment of the Project could positively impact the socio-economic profile of the SDM by creating job opportunities and stimulating local agricultural activities, thus promoting economic upliftment and diversification. However, the Project also poses potential challenges, including significant water and energy consumption, waste generation, and environmental impacts, which could strain local resources and affect community health. Therefore, while the Project offers promising benefits, careful management and mitigation of its negative effects are essential to ensure sustainable development in the region.

2.9.7 Midvaal Local Municipality

The MLM is a Category B municipality situated within the SDM in the southern part of the Gauteng Province. It is bordered to the north by the City of Ekurhuleni and the City of Johannesburg Metropolitan Municipalities, to the south by the Free State Province, and to the east by the Mpumalanga Province. Midvaal is the largest municipality in the district, encompassing nearly half of its geographical area. MLM comprises 15 wards and is one of three local municipalities that constitute the SDM.

Covering an area of 1,723 km², Midvaal includes the towns and cities of De Deur/Walkerville, Eikenhof, Meyerton, and Vaal Marina. The main economic sectors in the municipality are manufacturing, community services, finance, trade, transport, electricity, construction, and agriculture. The R59 and R82 are the primary transport corridors within Midvaal. The R59 is earmarked as a development corridor linking the City Deep logistics hub and OR Tambo International Airport in the north to the Vereeniging-Vanderbijlpark complex in the south. Additionally, the main railway line, running parallel to the R59, is a

freight line connecting Vereeniging to Germiston, while a commuter railway line along the eastern boundary of Midvaal links Emfuleni to the City of Johannesburg.

2.9.8 Midvaal Population

MLM is predominantly rural, with extensive farming activities constituting approximately 90% of its total jurisdiction. The municipality does not conduct its own demographic surveys and relies on Statistics South Africa as the official source of demographic data. The demographic data outlined below are derived from the Census 2022 provided by Statistics SA. Previous data from Census 2011 and Community Survey 2016 have been used in earlier Integrated Development Plans (IDPs), and where Census 2022 data is not yet available, these sources have been retained. As of 2022, Midvaal has a population of 112,254, up from a base of 95,301 in 2011, reflecting an annual growth rate of 1.6%. The number of households has also grown significantly, from 29,964 in 2011 to 36,464 in 2022 (**Figure 19**).

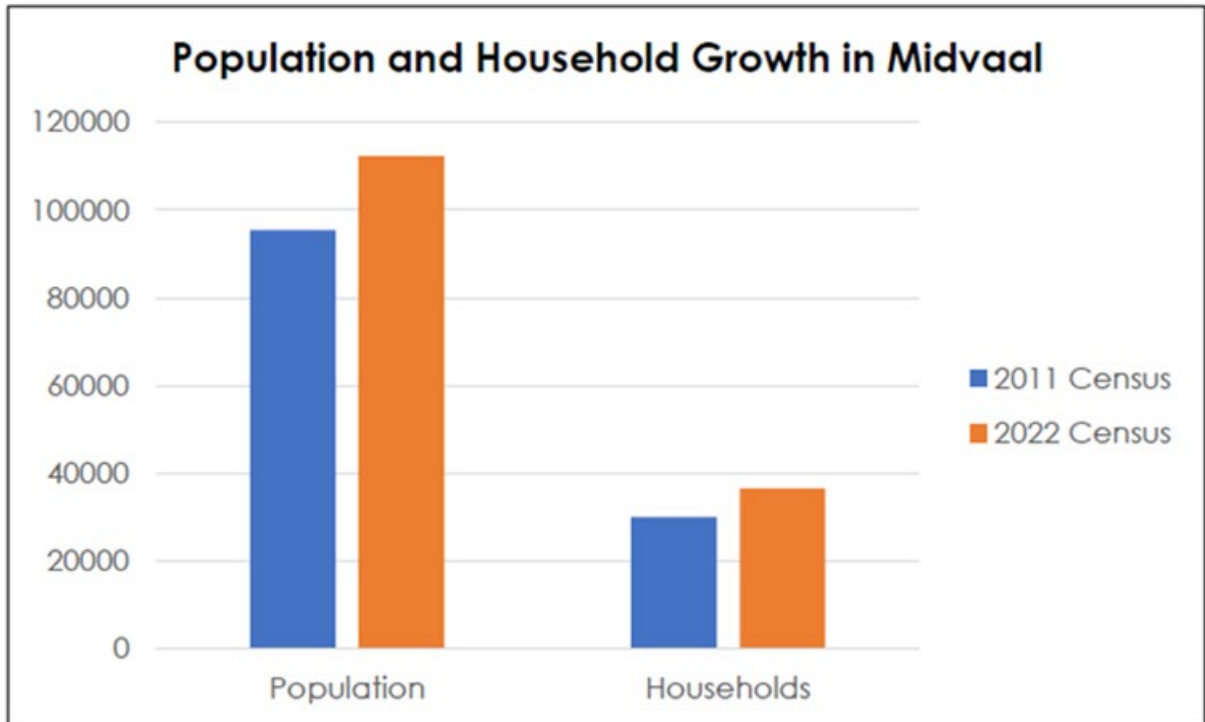


Figure 19: Population and Household Growth

The population of Midvaal is largely dominated by African Black and White populations, which together constitute more than 97% of the total population (**Figure 20**).

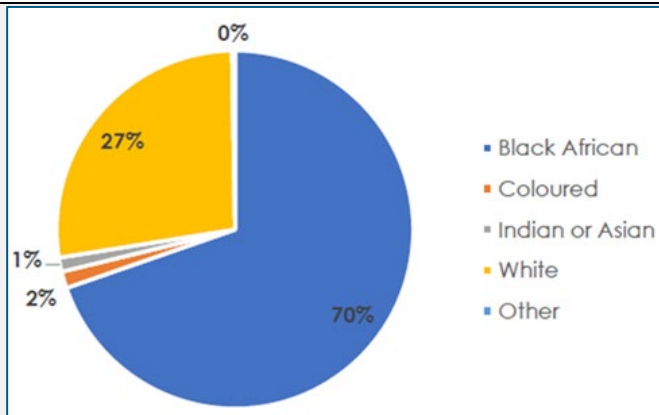


Figure 20: Population Groups in the MLM

The age profile of Midvaal's population is primarily youthful, with approximately 58% of the total population falling within the youth category. Additionally, around 70% of the population is within the working age group, defined as individuals aged between 15 and 64. The gender profile of Midvaal slightly favours males over females, with 52% of the population being male and 48% female, according to data from 2016. This distribution has remained relatively consistent since 2011, with less than a 1% shift in the profile (**Figure 21**).

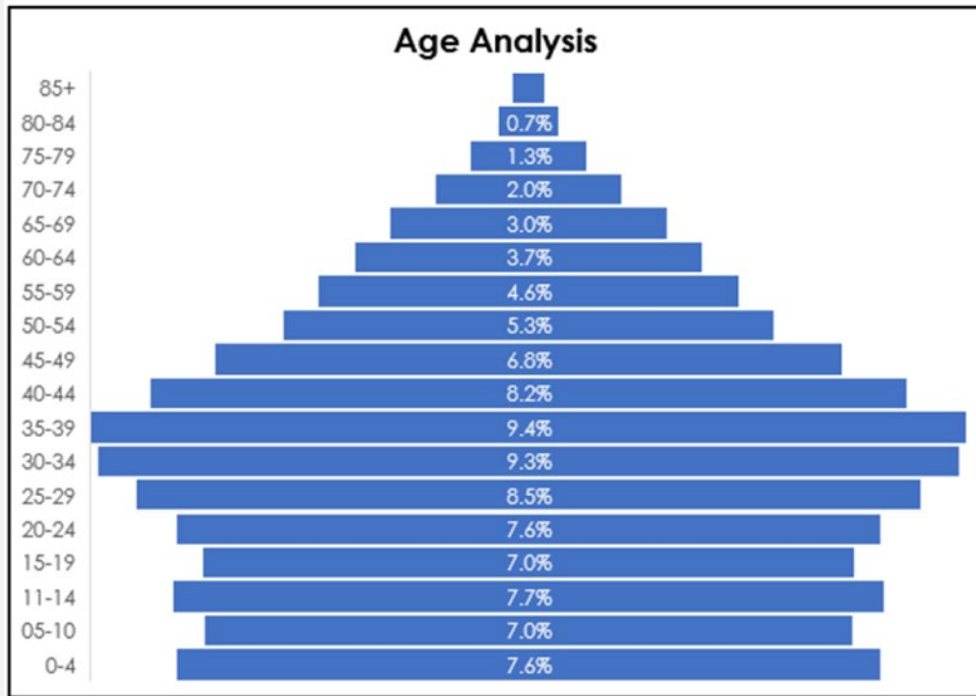


Figure 21: Population Pyramid

The population density in MLM has seen a substantial increase over the past decade. In 2022, the population density was recorded at 6515 persons per km², a significant rise from 55.31 persons per km²

in 2011. This dramatic increase highlights the growing concentration of people in the area, which has implications for infrastructure development, service delivery, and urban planning.

The dependency ratio in MLM has remained relatively stable over the past decade. In 2022, the dependency ratio was 42.0, slightly up from 41.9 in 2011. This consistency indicates that the proportion of dependents (individuals aged 0-14 and 65+) to the working-age population (15-64) has not changed significantly. A stable dependency ratio suggests a balanced demographic structure, which is crucial for sustainable economic and social development in the municipality.

2.9.9 Midvaal Economy

In 2013, the total GDP for the SDM was R42.7 billion, with the MLM contributing R6.52 billion. Notably, MLM had the highest average annual economic growth rate in the district, averaging 5.4% between 2003 and 2013. **Table 12** presents the municipal contributions to the SDM GDP and the average annual economic growth rate for each local municipality.

Table 12: SDM and Local Municipalities Contribution to the GDP and Average Annual Economic Growth Rate

District	GDP (2013)	Share of district municipality GDP	Average annual economic growth rate
Emfuleni	R32.7 billion	76.6%	3.12%
Midvaal	R6.5billion	15.3%	5.4%
Lesedi	R3.5 billion	8.1%	4.3%
Sedibeng	R42.7	100%	

The local Gross Domestic Product per Region (GDPR) in Midvaal is distributed among various sectors: the tertiary sector, including government, community and social services, and infrastructure services, contributes 31.5%; the secondary sector, encompassing manufacturing, wholesale and retail trade, finance, and property, accounts for 66.8%; and the primary sector, which includes agriculture, forestry, fishing, mining, and quarrying, represents 1.7%. This distribution, as illustrated in **Figure 22**, highlights the significant role of the secondary sector in the local economy, followed by the tertiary and primary sectors. This sectoral breakdown emphasizes Midvaal's diverse economic base, with a strong focus on manufacturing and trade, complemented by substantial contributions from government and social services.

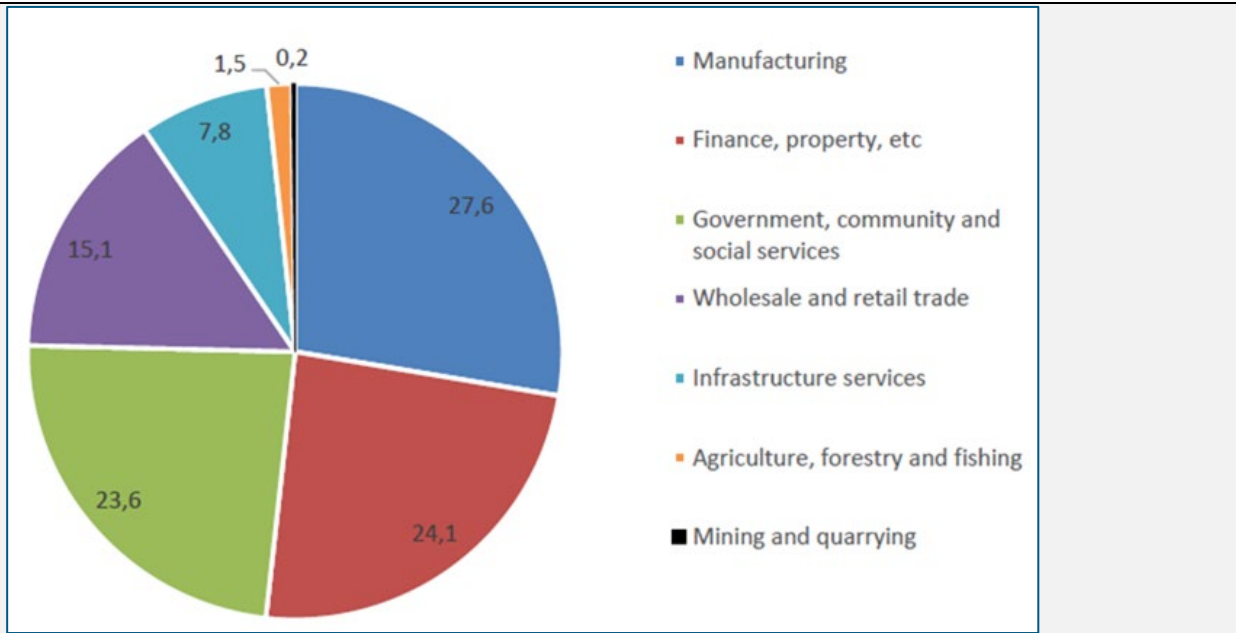


Figure 22: Economic Activity by Sector

MLM is part of the SDM, which also includes Emfuleni and Lesedi Local municipalities. Emfuleni is the largest contributor to the district's GVA, accounting for 72.81%, while Midvaal and Lesedi contribute 14.98% and 12.21%, respectively (**Figure 23**). GVA measures the economic output of a region, reflecting the value created within that area.

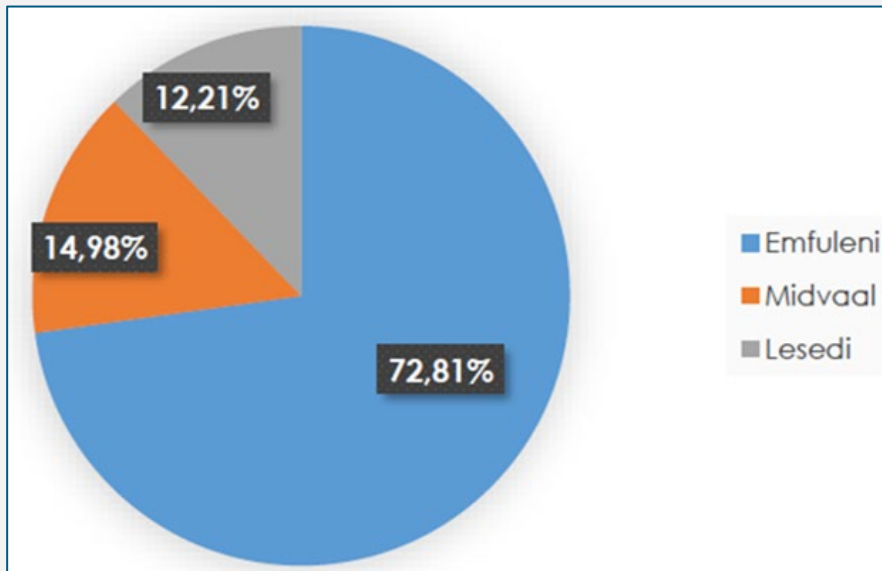


Figure 23: Municipality Contribution to District GVA (%)

According to the Midvaal Economic Analysis (2021) - Figure 24, the total GVA for Sedibeng was R49 billion in 2018, with Midvaal contributing R7 billion, Lesedi R6 billion, and Emfuleni R36 billion. Between

2001 and 2018, Midvaal had the second highest GVA growth rate at 2.79%, with Lesedi at 3.07% and Emfuleni at 2.03%.

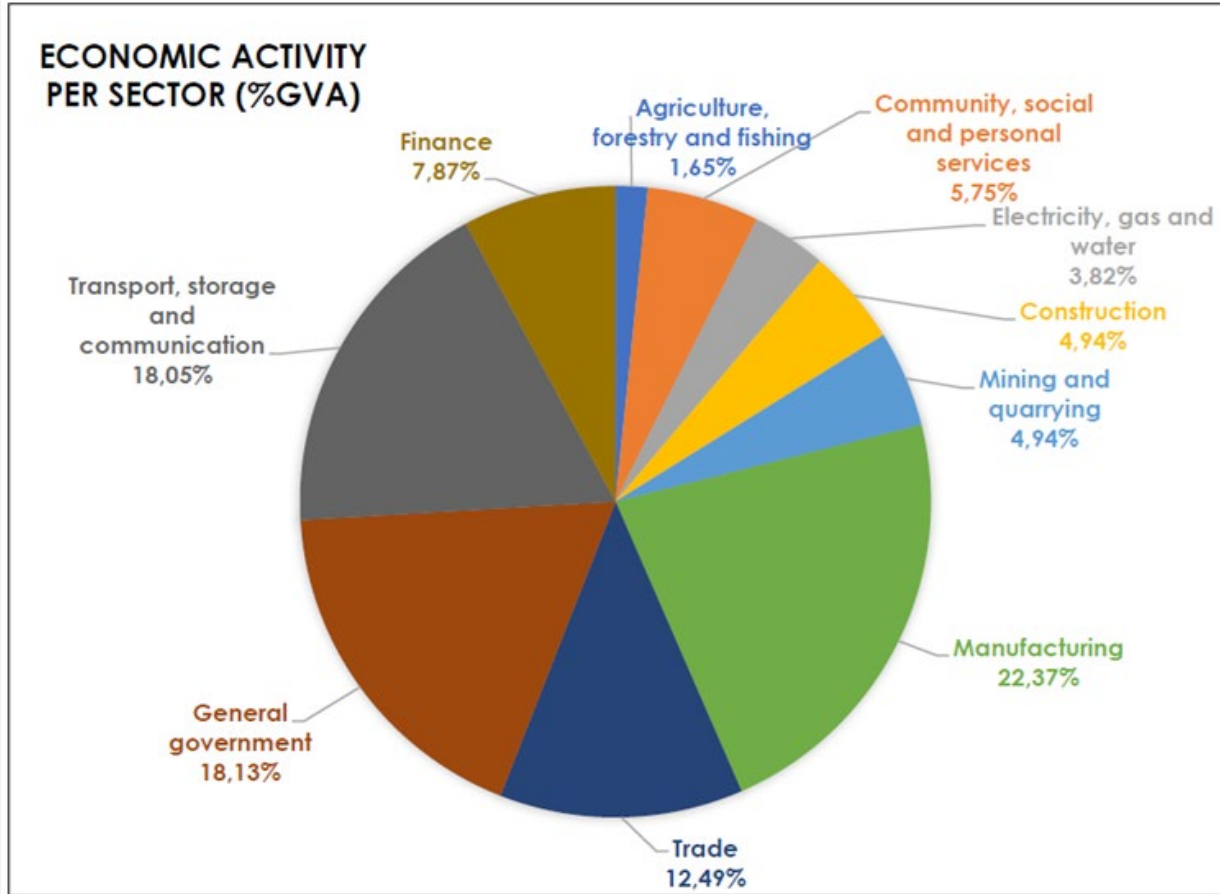


Figure 24: GVA by Economic Sector

The pillars of the local economy in Midvaal include manufacturing, general government, transport, storage and communication, and trade, which cumulatively contribute 71.04% of the GVA. **Figure 24** illustrates the economic activity per sector in Midvaal, as analyzed in 2021. The manufacturing sector is the largest contributor, accounting for 22.37% of the GVA. This is followed by the general government sector at 18.13%, and the transport, storage, and communication sector at 18.05%. Trade contributes 12.49%, while finance adds 7.87% to the economic activity. Community, social, and personal services represent 5.75%, and construction and mining and quarrying each account for 4.94%. The electricity, gas, and water sector contribute 3.82%, with agriculture, forestry, and fishing being the smallest sector at 1.65%. This distribution underscores the dominance of manufacturing and government services in Midvaal’s economy, complemented by significant contributions from trade, transport, and finance sectors.

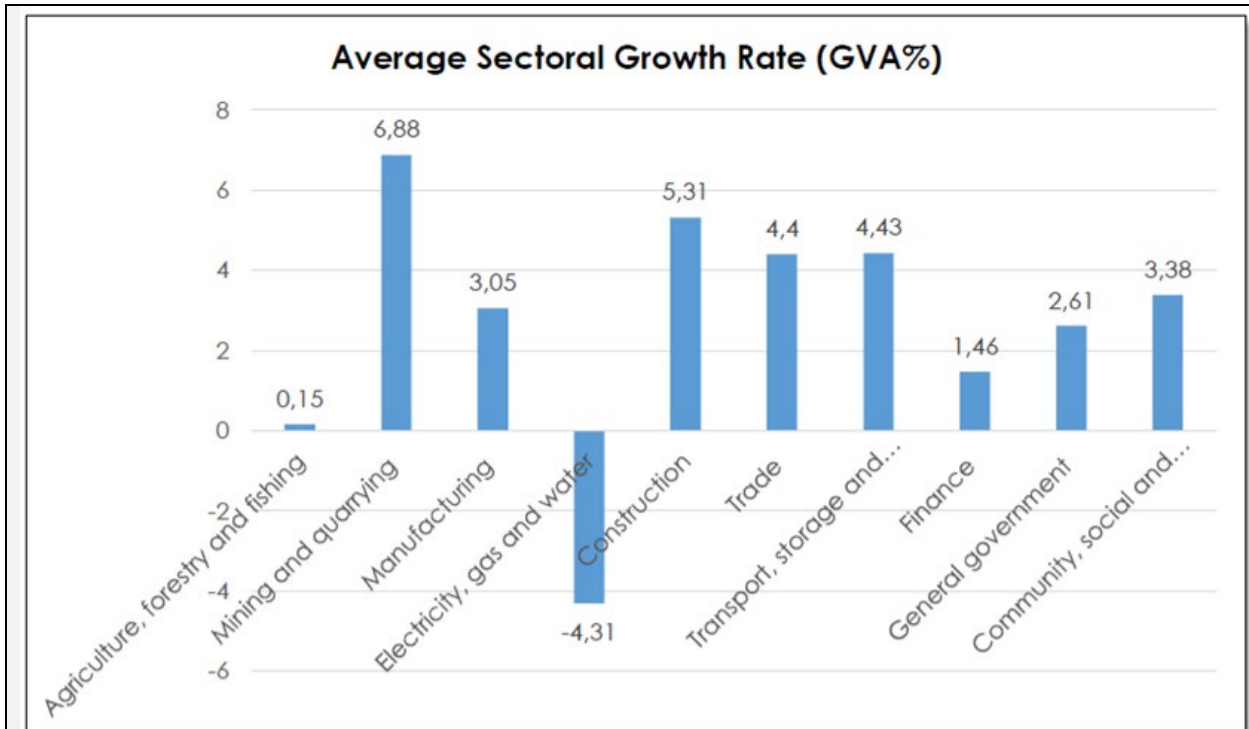


Figure 25: Average Sectoral Growth Rate, 2021

In terms of average sectoral growth, Midvaal's strongest sectors included mining and quarrying (6.88%), construction (5.31%), and transport and logistics (4.43%). Both Emfuleni and Lesedi exhibited similar growth trends, with mining and quarrying and construction sectors exceeding a 5% average annual growth.

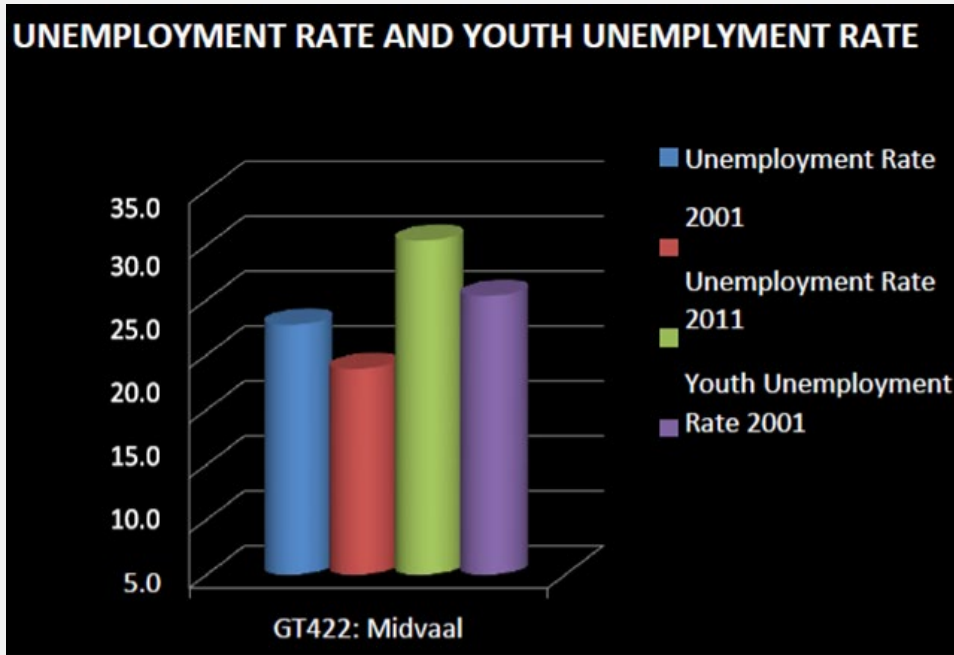
2.9.10 Midvaal Employment and Unemployment

The social well-being of a society is significantly influenced by the ability of its working-age population to secure employment and meet their basic needs. Employment not only contributes to the economic viability of a community, making it more self-sustainable, but also reduces reliance on government social assistance. In Midvaal, 70.4% of the population is economically active, with an employment rate of 81.2% and an unemployment rate of 18.8%.

According to the Midvaal Economic Analysis report, employment within the municipality spans both formal and informal sectors. The 2011 census data reveals that the formal employment sector is largely driven by financial and business services, which account for 21.9% of jobs, followed by community services at 18.7%, manufacturing at 18.6%, trade at 16.7%, and general government at 8.3%. While sectors like community services, general government, and trade have seen growth in employment opportunities, sectors such as agriculture, manufacturing, construction, and mining and quarrying have experienced a decline in job creation.

In the realm of informal employment, trade emerges as the dominant sector, contributing 45.0% of job opportunities. This is followed by community services at 13.6%, construction at 11.3%, transport, storage,

and communication at 10.5%, financial and business services at 10.4%, and manufacturing at 8.3%. Informal employment has shown growth in community services, financial and business services, and transport, storage, and communication, while sectors like construction, manufacturing, and agriculture have faced a decline. These trends reflect a parallel pattern of growth in both formal and informal employment sectors in Midvaal, underscoring the dynamic nature of the local job market.



(Source: Global Insight, 2011)

Figure 26: Unemployment Rate - 2001, 2011

Figure 26 illustrates a definite decline in both the overall unemployment rate and the youth unemployment rate between 2001 and 2011 in Midvaal. This decline is likely due to several new businesses investing in the area over the last few years, creating employment opportunities for the local community. MLM has the highest level of economically active population within the district, with 70.4% of its population being economically active. This high level of labour supply contrasts with the non-economically active population (29.6%), which includes children, youth, the elderly, and disabled individuals who are not able to be employed.

Furthermore, MLM boasts the highest employment rate compared to national, provincial, and district levels, with 81.2% of its population employed. Consequently, the unemployment rate in MLM stands at 18.8%. According to Stats SA, the working-age population in Midvaal is growing by approximately 1,204 people per annum, while the economically active population is expanding by about 720 people per annum. However, the local economy can absorb only around 189 people per annum, highlighting the challenges in matching job creation with the growing labour force.

2.9.11 Midvaal Education

The educational profile of MLM in 2022 (**Figure 27**) reveals a diverse range of educational attainment among its residents. A small proportion of the population, 3.5%, has no schooling, while 5.4% have completed some primary education and 2.7% have completed primary school. A significant portion, 29.9%, has attained some secondary education, and 40.1% have completed Grade 12 or Standard 10. Higher education levels are also notable, with 17.1% of the population having pursued post-secondary education. Additionally, 1.2% of residents fall into other categories of educational attainment. This distribution highlights the municipality's relatively high level of educational achievement, with a substantial segment of the population reaching secondary and higher education levels.

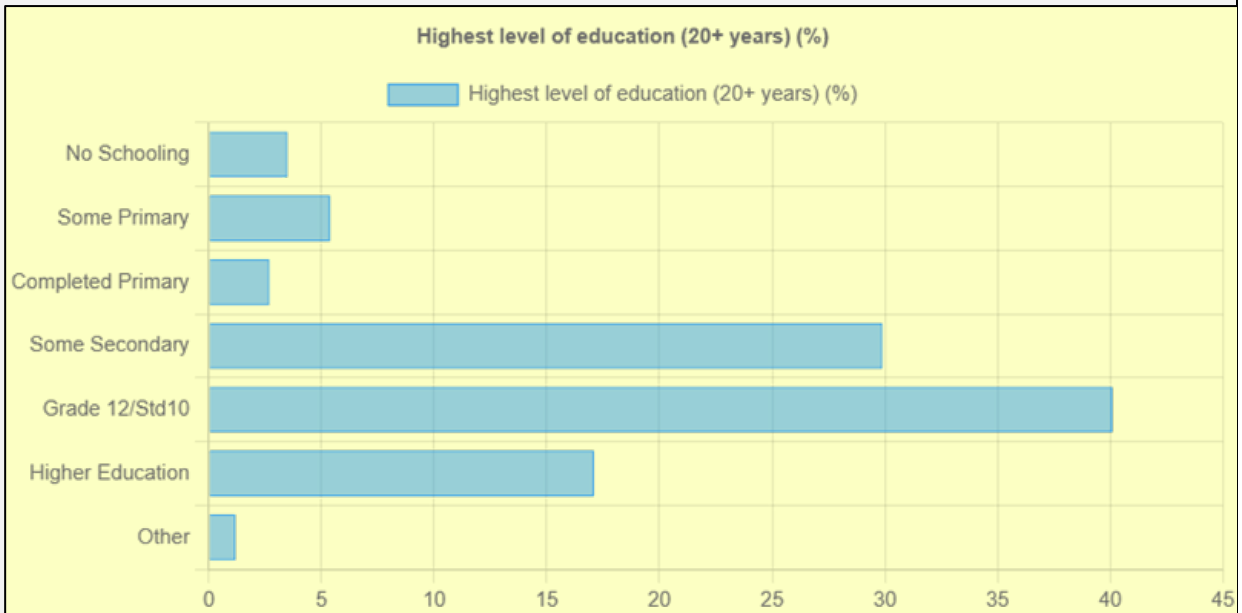


Figure 27: Education Attainment, 2022

2.9.12 Midvaal Human Development Index and Gini Coefficient

According to the relevant data, MLM has the highest HDI compared to the other local municipalities within the SDM. This suggests that Midvaal enjoys a better-balanced society overall, with higher levels of life expectancy, literacy, and income, reflecting improved human development outcomes.

Table 13: HDI for SDM and Local Municipalities, 2009

	Sedibeng District	Emfuleni Local Municipality	MLM	Lesedi Local Municipality
Black	0.52	0.53	0.45	0.47
White	0.87	0.87	0.88	0.87
Coloured	0.60	0.62	0.55	0.49
Asian	0.77	0.76		
Total	0.60	0.60	0.64	0.56

According to the data, there exists a significant imbalance in terms of overall income distribution in MLM compared to adjoining local and district municipalities. This high Gini coefficient indicates a pronounced income inequality within Midvaal, highlighting the disparity between the highest and lowest income earners in the area. The number of people in poverty refers to those living in households with an income below the poverty threshold. The poverty threshold, or poverty line, represents the minimum level of income necessary to achieve an adequate standard of living. This threshold varies significantly between developed and developing countries and is defined by the minimum monthly income needed to sustain a household, which increases with household size.

Table 14: Population Poverty Level, 2009

	Sedibeng District	Emfuleni Local Municipality	MLM	Lesedi Local Municipality
Black	0.52	0.53	0.45	0.47
White	0.87	0.87	0.88	0.87
Coloured	0.60	0.62	0.55	0.49
Asian	0.77	0.76		
Total	0.60	0.60	0.64	0.56

According to the data, MLM has a lower poverty rate of 17.2% compared to the district average of 38.4%. This indicates that a smaller proportion of Midvaal's population lives below the poverty line relative to the broader district. Additionally, the poverty threshold in Midvaal stands at 28, which is considerably lower than in Lesedi (50) and Emfuleni (475). This lower poverty rate and threshold reflect a relatively better standard of living and economic conditions in Midvaal compared to its neighbouring municipalities.

The establishment of the Project could have a significant impact on the socio-economic profile of the MLM. Positively, the Project is expected to create substantial job opportunities, which could help reduce the local unemployment rate and enhance economic stability. The Project's demand for agricultural produce, particularly barley, could invigorate local farming activities, promoting economic diversification

and supporting the predominantly rural economy. Additionally, the influx of businesses and services associated with the plant may stimulate local commerce and infrastructure development.

However, the significant consumption of water and energy by the plant could strain local resources, affecting the availability of these essential utilities for other community needs. Environmental concerns, such as waste generation and emissions, could impact the local ecosystem and public health if not managed properly. These factors could potentially offset some of the socio-economic benefits. Therefore, while the Project offers promising economic opportunities for the MLM, it is essential to implement robust resource management and environmental protection measures to ensure sustainable development.

2.9.13 Sustainable Practices Context

The Project aims to incorporate sustainable practices and energy-efficient technologies as part of its operations. This commitment to sustainability is in line with global trends towards reducing environmental impact and enhancing resource efficiency in industrial processes.

2.9.14 Energy Recovery and Efficiency

The malting process involves several stages where significant energy is required, particularly during the kilning phase. To address this, the Project will implement advanced energy recovery systems. These systems include static glass tube heat exchangers and potentially open cycle heat pumps, which can recover up to 60% of the energy used in the kilning process. This recovered energy will be reused, thus reducing the overall energy consumption, and improving the Project's environmental footprint.

2.9.15 Use of Renewable Energy

A Solar PV Plant (independent of the Heineken Solar PV Plant) will be considered in the future. Utilising solar energy not only reduces reliance on fossil fuels but also aligns with broader environmental goals of reducing greenhouse gas emission.

2.9.16 Water Conservation and Management

Water is a crucial resource in the malting process, particularly during the steeping and germination phases. The Project will implement water-efficient technologies and practices to minimise water usage. This includes the use of steeping tanks designed to reduce water consumption and the incorporation of dry transfer systems for barley, which further conserves water. Additionally, all wastewater will be treated in compliance with environmental regulations, significantly reducing effluent and ensuring sustainable water management.

2.9.17 Applicability for the Development

The Project's commitment to sustainability through energy recovery, renewable energy use, and water conservation sets a benchmark for industrial projects. These initiatives demonstrate the Project's dedication to minimizing its environmental impact while contributing to the local economy and promoting sustainable development. The integration of sustainable practices by the Project not only supports environmental goals but also enhances operational efficiency and socio-economic benefits. This holistic

approach to sustainability positions the Project as a forward-thinking and responsible industrial development, aligning with global trends and local needs.

2.9.18 Noise

The surrounding topography can be defined as plains, hills and lowlands, with the surrounding land use being mainly residential, some wilderness and industrial. Residential areas are located to the south and south-west of the study area with industrial activities taking place to the north and east. Wilderness is located to the west and north-west. A small group of approximately eight small holdings is situated 1km south-west of the proposed plant area, with an informal settlement located 1.1km to the south. A few potential noise-sensitive receptors (“NSR”) are scattered in a heterogeneous manner in the area.

The ambient sound levels were mainly dominated by noises from Heineken and SOLA PV plant at the two measurement locations closer to these activities. Noise from birds, insects, farm animals and road noise from the R59 dominated the soundscape at the measurement location at the small holding.

In addition, considering international guidelines, the IFC (relevant for projects financed by the World Bank Group, the following noise levels should not be exceeded:

- 55dBA (as recommended by the IFC) for daytime residential use and
- 45dBA (as recommended by the IFC) for night-time residential use.

The plant should limit the noise level to less than 60dBA on the boundary (70dBA during the daytime period, and 60dBA at night for a 70dBA day-night noise limit).

2.9.19 Traffic

Assessment Years

For the purpose of analyses the following assessment years and scenarios have been analysed to provide a basis for comparison and to develop a good understanding of the transport impact presented by the development proposal.

- 2024 Base Year Weekday AM and PM peak;
- 2029 Design Year Weekday AM and PM peak without development; and
- 2029 Design Year Weekday AM and PM peak plus development traffic.

Study Area

The study area includes the area of the proposed malt production facility as well as the external road network immediately surrounding the development. The area identified is based on the transportation infrastructure expected to be affected by the proposed development. **Figure 28** shows the study area which includes the following intersections:

- R550 East West/R550 North-South
- R550/De Man Drive
- R550 / Unknown Road



Figure 28: Key Intersections

Peak Hours

The following peak hour periods were assessed to determine the transport impact of the development:

- AM - 06:30 – 07:30
- PM - 17:00 – 18:00

Trip Generation

The proposed development will increase the number of trips in the vicinity. The South African Trip Data Manual Version 1.01, September 2013" prepared by the local Committee of Transport Officials (COTO) was used to determine the trip rates for the Industrial development. **Table 15** and **Table 16** provide information about the expected trip generation from the development. It is anticipated that 50 vehicle trips will be generated during both AM and PM peak hours, with a split of 80/20% during AM and 20/80% during PM peak hours. This data is used to plan infrastructure such as roads, parking, and public transportation to accommodate the expected traffic. The intersection capacity analysis was based on these vehicle traffic generation figures.

Table 15: Weekday AM Expected Trip Generation

Land-Use	GLA (m2)	Vehicle Trip Rate	AM		Total Trips
			In	Out	
Light Manufacturing	8344	0.6	40	10	50
			80%	20%	
Totals			40	10	50

Table 16: Weekday PM Expected Trip Generation

Land-Use	GLA (m2)	Vehicle Trip Rate	AM		Total Trips
			In	Out	
Light Manufacturing	8344	0.6	10	40	50
			20%	80%	
Totals			10	40	50

Trip Distribution and Trip Assignment


This Project is located in an industrial area where workers are expected to be employed. The construction and operation of the Project will create numerous job opportunities for local workers in the surrounding industrial area. This will not only boost employment rates but also contribute to the economic growth and development of the community. There is good access to both R550 and R59 from the development. Having easy access to major roads like the R550 and R59 is advantageous for the development as it allows for convenient transportation and connectivity. Therefore, the following trip distribution has been assumed to assign the development traffic to the surrounding road network:

- At the peak hour of AM, 98% of development traffic to and from the east is routed via the R550, and 2% of development traffic is routed via the R550 to the west.
- At the peak hour of PM, 94% of development traffic to and from the east is routed via the R550, and 6% of development traffic is routed via the R550 to the west.

Existing Road Network

The key roads that form part of the study area were identified. The South African Road Classification and Access Management Manual (RCAM) Version 1.0 (July 2012) was used to classify the surrounding road networks.

	<p>The R550 East-West is a Class 2 east-west regional route located to the north of the development. The road is a two-lane single carriageway and serves as a mobility corridor for the region. The R550 East-West route plays a crucial role in enhancing transportation connectivity in the region. By serving as a mobility corridor, it facilitates the smooth flow of traffic, connecting various areas and enabling efficient movement of goods and people. Its classification as a Class 2 regional route highlights its significance in supporting regional development and ensuring convenient access to key destinations within the area.</p>
	<p>The R550 North-South is a Class 2 north-south regional route located to the north of the development. The road is a two-lane single carriageway and serves as a mobility corridor for the region. The R550 East-West route plays a crucial role in enhancing transportation connectivity in the region. By serving as a mobility corridor, it facilitates the smooth flow of traffic, connecting various areas and enabling efficient movement of goods and people. Its classification as a Class 2 regional route highlights its significance in supporting regional development and ensuring convenient access to key destinations within the area.</p>
	<p>The R550 North-South is a Class 2 north-south regional route located to the north of the development. The road is a two-lane single carriageway and serves as a mobility corridor for the region. The R550 East-West route plays a crucial role in enhancing transportation connectivity in the region. By serving as a mobility corridor, it facilitates the smooth flow of traffic, connecting various areas and enabling efficient movement of goods and people. Its classification as a Class 2 regional route highlights its significance in supporting regional development and ensuring convenient access to key destinations within the area.</p>

	<p>De Man Drive is a North-South activity road serving as the collector street for the Kliprivier Business Park. It is a two-lane dual carriageway. Compared to other collector streets in the area, De Man Drive stands out for its efficient traffic flow and well-maintained infrastructure. Its two-lane dual carriageway design ensures smooth and uninterrupted travel for both commuters and businesses within the Kliprivier Business Park.</p>
	<p>The speed limit on this road is 60km/h.</p>
	<p>The Access Road (Unknown Road) serves as a North-South activity road intended to be the collector street for the proposed Project. The road is a two-lane single carriageway.</p> <p>The speed limit on this road is 60km/h.</p>

Existing Intersections

The following intersections are included in the study area for the purpose of capacity assessment:

- R550 East -West / R550 North -South
- R550 East -West / De Man Drive
- R550 East -West / Unknown Road

Existing Traffic Operations

The present traffic demand on the surrounding road network was obtained from traffic counts conducted during weekday AM and PM peak periods. The traffic counts indicate that R550 carries the highest volumes in both peaks; with approximately 301 vehicle per hour (vph) and 396 vph (both directions) during the AM and PM peak respectively.

Visual Observations

Site observations were conducted during both AM and PM peak periods at various intersections near the study area. The observations indicate that all roads are operating well in both AM and PM peak.

Proposed Access Points to the Malt Production Facility

A southern extension of the existing access road will serve as the access road to the development. The access road will begin at the existing circle and the first gate will be located on the Project's property. There will be no closure of any area outside of the Project's property. In addition, trucks will move from the main entrance to the administrative building and weighbridge. In the event that the samples are

approved, the truck will continue to the north for offloading. In the event that a truck is rejected, it will turn around at the circle and exit the facility.

2.10 CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) *Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-*

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

<p>Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?</p>		NO
<p>If YES, explain:</p>		
<p>Not Applicable.</p>		

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.

Briefly explain the findings of the specialist if one was already appointed:

During the fieldwork by a Heritage Specialist, a total of two heritage resources were identified. Both the old road (SM01) and old pipeline (SM02) markers were rated as having a Low heritage grading and are not conservation worthy (NCW) as they contain no cultural or scientific value.

Site Number	X	Y	Brief Site Description	Significance	Heritage Rating
SM01	-26.45237	28.07528	Two old road markers.	-	NCW



Figure 29: Old Road Marker



Figure 30: The Opposite Road Marker

Site Number	X	Y	Brief Site Description	Significance	Heritage Rating
SM02	-26.45211	28.07341	Old pipeline marker.	-	NCW



Figure 31: Old Pipeline Marker



Figure 32: Another View of the Pipeline Marker



A site-specific Palaeontological field survey of the development footprint was conducted and no fossiliferous outcrop was detected in the proposed development. Based on the site investigation as well as desktop research it is concluded that fossil heritage of scientific and conservational interest in the development footprint is rare. This is in contrast with the Very High Sensitivity allocated to the development area by the SAHRIS Palaeo-sensitivity Map and DFFE Screening Tool. This classification is thus contested as far as the impact of the development is concerned (National Environmental Web-bases Screening Tool and SAHRIS), based on actual conditions recorded on the ground during the site visit in June 2024. A medium palaeontological significance has been allocated for the construction phase of the development pre-mitigation and a low significance post mitigation.

Will any building or structure older than 60 years be affected in any way?		NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?		NO
If yes, please attached the comments from SAHRA in the appropriate Appendix		

3 SECTION C: PUBLIC PARTICIPATION (SECTION 41)

The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

3.1 LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment?	YES	
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If yes, has any comments been received from the local authority?	YES	
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If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):
--

11 July 2024 – Midvaal Local Municipality Development & Planning Department

1. Project location
 - 1.1 Remaining Extent of Erf 244 Graceview Extension 3 Township.
2. Zoning of the Properties as per Midvaal Land Use Scheme, 2023
 - 2.1 The property is zoned Industrial 1 with an annexure for Commercial uses, place of refreshment of own employees only and with the written consent of the local authority such as retail trade and industries which subordinate and related to the main commercial use and Agricultural Industry for a Malting Plant.
3. Midvaal Spatial Development Framework 2024/2025
 - 3.1 In terms of the above-mentioned policy, the subject properties fall within the demarcated Urban Development Boundary and are earmarked for “Industrial/Commercial” purposes.
4. R59 Corridor Strategic Development Plan, 2011
 - 4.1 In terms of the above-mentioned policy, the subject area is earmarked as Existing Industrial” whereby “Industrial/Commercial” land uses are permitted.
5. Dolomite
 - 5.1 The properties are affected by dolomite and thus will be subject to a dolomite stability report prior to building plan approval in line with the provisions of Clause 20 of the Midvaal Land Use scheme, 2023.
6. Provincial Roads
 - 6.1 The application properties are affected by existing Gautrans routes.
7. Land Use Section
 - 7.1 The proposed Malting Plant can be accommodated as a primary right on the portion zoned “industrial 1” and no land use application is required subject to the following:
 - Site Development Plan being submitted for consideration.
 - Building Plans being submitted for consideration.

12 July 2024 – Midvaal Local Municipality

1. Impact of ground water extraction in an area underlain by dolomite, especially with areas denoted as D3 and D4 in close proximity to the proposed plant.
2. Midvaal has a height restriction on any structures built within the Midvaal area of jurisdiction. This also applies to the height of future silo’s for storage.

11 September 2024 – Sedibeng District Municipality

1. Heineken Sedibeng Brewery was supposed to acquire an Atmospheric Emission License (AEL) prior to this process and are currently in discussions with Heineken regarding this. Sedibeng District Municipality will provide written comments before the 17th of September 2024.

2. In terms of air quality, the focus is not only on smoke and pollution but also on volatile organic compounds (VOCs) emitted through the production process as the VOCs are also a source of pollution as they represent a nuisance.
3. Enquiry about the role of the baghouses in the production process as it is generally used to contain pollutants prior to being emitted and what other point sources are within the plant.
4. Enquiry about the size of the pellet that will be used for animal feed, and if there are any additional carcass for the animal feed.
5. Enquiry about the role of kilning in the production process.
6. Enquiry about the mitigation measures to control odours and VOCs as this common in similar projects that the odour is a significant issue.
7. Enquiry whether the conveyor belts that will be distributing the malt to Heineken Brewery will be covered and if gas will be used to generate electricity.
8. There are two proposed 6MW boilers mentioned in the report, there is currently a review of the Section 23 Controlled Emitter permit, where boilers have to be registered, currently Sedibeng does not have Air Quality By-laws, these are currently being drafted and will be submitted for approval. This will also need to be considered in the absence of the District By-laws, they will also have a look at the MLM By-laws and advise.
9. The final timelines are not known yet.

01 October 2024 – Midvaal Local Municipality Engineering Department

Electrical

1. The Municipality has enough capacity in the Graceview substation to supply the required capacity of 15 MVA as per the email below.
2. The Developer shall appoint consulting engineers for the electrical design, supervision, and commissioning of the reticulation network as well as the contractor for the construction works.
3. Appointed consulting engineers shall discuss the supply point, design, and associated equipment with MLM.
4. MLM shall approve the electrical network design and equipment to be installed before implementation.

Water and Sanitation

1. The bulk water supply for this zone is currently operating at excess volume over the licence target. Looking at the latest data we are exceeding the license target with an average of 76 411Kl/m leaving no available capacity on the system to supply any further development at the business park.
2. Several meetings were held with the developer in which they were advised, there is not enough bulk water supply and they were advised to approach Rand Water directly.
3. ERWAT indicated they have spare capacity at their plant; however, the developer was advised to assess and evaluate available pumping and pipeline capacity at Heineken pump station. They have not come back to us since then.

02 October 2024 – Sedibeng District Municipality

General Comments

1. Classifications of Alcohol as organic chemicals

- Alcohols are classified as organic chemicals because they contain carbon atoms and are derived from living organisms or can be synthesized from organic precursors. The general formula for alcohols is (ROH), where (R) is a hydrocarbon group, and (OH) is the hydroxyl group (-OH). The presence of the hydroxyl group is a distinguishing feature of alcohols, making them part of the broader class of organic compounds that includes carbohydrates, lipids, and proteins.

Classification as Organic Chemicals:

- Carbon Backbone: Alcohols, like all organic compounds, are primarily composed of carbon (C) atoms. They also generally contain hydrogen (H) atoms and may include other elements like oxygen (O).
- Hydroxyl Functional Group: The presence of the hydroxyl (-OH) group is a key feature of alcohols that differentiates them from other classes of organic chemicals. This functional group influences the chemical behaviour and properties of alcohols.
- Nature and Sources: Alcohols can be found in nature (e.g., ethanol in fermented beverages) or produced synthetically. They play roles in biological processes and have numerous applications in pharmaceuticals, food, and industry.

Air Emission Pollutants:

- Volatile Organic Compounds (VOCs): Many alcohols are volatile, meaning they can evaporate easily into the atmosphere. Alcohols like ethanol and isopropanol are classified as VOCs, which can contribute to air pollution when released into the environment.
- Ozone Formation: VOCs, including alcohols, can participate in atmospheric chemical reactions that lead to the formation of ground-level ozone. This occurs when VOCs react with nitrogen oxides (NOx) in the presence of sunlight, which can lead to smog and have adverse health effects.
- Direct Release: In industries that utilize alcohols as solvents or in chemical processes, there can be direct emissions of alcohol vapours into the atmosphere, contributing to local air pollution concerns.
- Estimation of particulate matter (PM) and volatile organic compounds (VOCs) from a malting plant.

Estimating air emissions of particulate matter (PM) and volatile organic compounds (VOCs) from a malting plant requires specific data about the processes involved, the types of grains used, and the technology implemented in the facility. However, I can provide a general framework for how you might approach estimating these emissions based on a production rate of 500 tons per year.

1. Particulate Matter (PM) Emissions

1.1. Sources of PM:

- Dust generated during grain handling (transport, milling, etc.).
- Particles from the drying process (including grain husks).

1.2. Estimation Approach:

- A rough estimate for PM emissions from malting plants can range from 0.5% to 2% of the total grain processed. This percentage can vary based on efficiency of dust control systems, types of grains, and processing methods.

2. For 500 tons/year production:

- Low estimate (0.5%): 500 tons * 0.005 = 2.5 tons PM/year.
- High estimate (2%): 500 tons * 0.02 = 10 tons PM/year.

2. Volatile Organic Compounds (VOCs) Emissions

2.1. Sources of VOCs:

- Emissions can arise from the malting process itself, particularly during the drying phase, as well as from fermentation processes (if applicable).

2.2. Estimation Approach:

- VOC emissions can vary widely based on the materials used, ranging from 0.1% to 0.5% of the total grain processed for smaller facilities.
- For 500 tons/year production:
 - Low estimate (0.1%): 500 tons * 0.001 = 0.05 tons VOC/year (~100 lbs).
 - High estimate (0.5%): 500 tons * 0.005 = 2.5 tons VOC/year.

2.3. Summary Estimate

- Particulate Matter (PM) Emissions: 2.5 to 10 tons/year.
- Volatile Organic Compounds (VOCs) Emissions: 0.05 to 2.5 tons/year.

Important Considerations

1. Regulatory Standards: Emissions can have regulatory limits. It's important to consider local environmental regulations when calculating potential emissions.
2. Control Technologies: The efficiency of emission control systems (such as baghouses, scrubbers, or cyclone separators) will significantly affect actual emissions.
3. Operational Practices: Good housekeeping and operational practices can reduce dust emissions from grain handling and processing.
4. Field Measurements: Ideally, you would want to measure emissions directly to get a more accurate value rather than relying solely on estimates.
5. Continuing Studies and Local Data: Local or regional studies on similar facilities can provide more specific insights into expected emissions.

This framework should provide a starting point for estimating PM and VOC emissions from a malting plant with a production capacity of 500 tons per year.

Comments of the Air Quality Assessment Report

1. Compliance with Ambient Air Quality Standards:

- The report indicates that concentrations of SO₂, NO₂, and CO comply with short-term standards. However, daily concentrations of PM₁₀ and PM_{2.5} are frequently above the applicable NAAQS. This suggests that while the facility may not significantly contribute to these pollutants, contributes to an already existing non-compliance issue.
- Recommendation: Continued monitoring of these pollutants is essential to ensure that compliance is maintained and to develop effective pollution mitigation strategies.

2. Odour Management:

- The assessment notes potential for increased odour impacts, particularly at receptors to the south and southwest of the facility, primarily due to kiln emissions. Odour nuisance is projected to affect nearby communities.
- Recommendation: Implementation of an odour management plan, including complaints register and a proactive monitoring and mitigation strategy, is crucial. Consideration should be given to technological upgrades that can minimize odours, especially during peak operational times.

3. Particulate Matter Emissions:

- The report identifies barley intake, storage, and drying as the primary sources of particulate emissions. The assumption of continuous emissions at a ceiling level may lead to overestimation.
- Recommendation: Implement enhanced dust control measures, such as the use of water sprays or dust suppressants, especially during dry seasons. Additionally, actual emissions data should be collected post-installation to validate the assumptions made in the report.

4. Impact of Other Local Sources:

- The facility will operate within a challenging air quality context given existing local background pollution from industries, vehicle emissions, and domestic fuel combustion.
- Recommendation: A collaborative regional air quality management approach might be beneficial. Engaging with local government and nearby industries to align pollution reduction initiatives can mitigate cumulative impacts.

5. Long-term Monitoring and Reporting:

- The report suggests regular ambient air quality monitoring and detailed reporting of NO₂ and PM₁₀ levels, along with maintaining records of odour complaints and corrective actions taken.
- Recommendation: Establish a continuous air quality monitoring station near the facility to provide real-time data. This can improve transparency and community trust, while also enabling swift responses to any exceedances.

6. Buffer Zones:

- The report recommends a minimal buffer zone of 100m to 250m from the facility, classifying it as a Category 2 industry. The presence of sensitive receptors within the buffer raises concerns regarding health impacts.
- Recommendation: It may be prudent to explore and implement stricter buffer zone policies or community guidelines to protect nearby residences and schools from potential emissions.

7. Cumulative Impact Assessments:

- While the individual impact assessments have been evaluated, the report should have included a cumulative impact assessment considering the interactions of multiple pollutant sources in the area.
- Recommendation: A more robust cumulative assessment should be conducted to account for both existing and proposed developments within the Sedibeng region to understand the broader air quality implications.

8. Mitigation Measures:

- The report provides initial mitigation measures but lacks specificity regarding implementation.
- Recommendation: Detailed plans, stakeholder engagement, and strategies for regular reviews of mitigation measures should be developed to ensure effective air quality management post-implementation.

If “NO” briefly explain why no comments have been received or why the report was not submitted if that is the case.

Not Applicable.

3.2 CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least thirty (30) calendar days before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?

YES

If “YES”, briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Willowbrooke, 16 and 24 June 2024

1. The environmental impact of burst pipelines/discharge from local business over lands into river courses and obnoxious odours within the community of the greater Kliprivier region.
2. The current climate is that there have been past issues where burst pipelines occurred in the area where the community reported to local authorities and businesses involved. Lack of responsibility was an issue where none of the entities involved took initial charge causing the environment to suffer along with the residents in its path. Currently there are outstanding environmental concerns being investigated from 2021. The community and environment are the ones suffering due to the lack of responsibility and action.
3. Negative impact on the area, animal and aquatic life and human health and lifestyle including: burst pipelines; burst wall dams; discharging effluent over land into furrows into rivers; overflowing pump houses causing the Klip River to receive effluent from the overflow; obnoxious and offensive smells from local businesses (hop/sewerage/grains); excessive pest issues due to effluent releases and burst pipelines; eco-systems being negatively impacted; health concerns for the residents in the area; endangerment to animal life; ozone and odour pollution; reduced property values; direct impact on tourism businesses; underground; water concerns due to effluent release into fields, rivers and burst pipes.
4. Lack of responsibility when impact occurs.
5. Loadshedding impact on ERWAT and pump stations have caused breakdowns and overloading causing overflowing and effluent release over lands in proximity to residential property and rivers being affected.
6. ERWAT Design & Maintenance capacity for additional discharge (Burst Wall February 2024) current overload concerns. Recent failure of the retaining walls along the ponds (structural issue).
7. Discharge of black water into the Klip River and across lands not far from residents and boreholes/dams.
8. The pipe burst has occurred on the line from the Pump Station in Joan Road to ERWAT on numerous times. The “fatal” incident where it affected our spring lake occurred in January 2021, the matter is currently still being investigated. The matter was reported to the relevant authorities on the 4 January 2021.

When the incident occurred, there was a delay in repairing the fix and when it was eventually repaired the pipe broke in the same place. It was not the first time that the pipe burst. The secondary issues when the pipe bursts is that effluent continues being discharged to the pump station where it will eventually overflow at the pump house and expel into the Klip River which is an environmental catastrophe. A third issue was with extensive load shedding periods when the pump stations generator was not operational rendering the pump house ineffective and failing in operations causing spillage over the lands into the Klip River.

9. As explained, we have had to deal as residents with foul smells polluting the air, pests breeding in contaminated water and our water being compromised on our property as well as the Klip River. I have done extensive reports on this matter. My own business and property has been negatively affected to the point that is undesirable to sell due to the odour emanating from the pump house when spillages occur as well as when there is no spillages a foul smell at times occurs and is incredibly offensive. We further have to deal with offensive odours from ERWAT caused by spillages, breakdowns, pipes being stolen causing sludge spillage, not able to rehabilitate area due to location

of spills (vlei area) plus there is concern that the plant needs an upgrade to increase its capacity so perhaps this should occur first before any new developers tap into this already strained plant.

10. I have quite a few incidents on video however due to file size they are too large to send. The images attached indicate the site of burst pipe and the proximity of the pumpstation to the burst pipe and river.

Willowbrooke, 18 September 2024

1. Thank you for your response. I am mailing to confirm that the same pipe burst on the 18/08/2024. The matter was reported to the relevant authorities however the management of the said leak was once again questionable. The pipeline is under the Midvaal Municipality management and has nothing to do with ERWAT or the management thereof.
2. The(y) said (the) fix(ing) of the pipe was to collect the effluent from the broken pipe via honey suckers and dispel at the Joan Road Pump House where it was noted that the effluent would then go back into the "system" en-route to ERWAT however this proved unsuccessful as the burst pipe is post the pump station (located between the pump house and ERWAT). In effect the effluent was collected, dispersed, and then ended up in the same position it was collected due to the broken pipe. On discovery of this the honey suckers then collected from the source of the broken pipeline and dispelled direct to ERWAT. However, the effluent was a continuous flow due to valves most likely not closed. The effluent eventually reached the sleeve under the road and was dispelling on both sides of Joan Road, making its path to the Klip River. To date there is still effluent lying on the surface of the land with a vile smell which has not been collected or area rehabilitated. The cy(a)nobacteria algae green hue with its vile and offensive smell should be a cause of concern for all local business and council which negatively impacts the environment and local residents.
3. The valves where not closed as ERWAT has no mandate over the valves and can only close on the authority of Midvaal Council. Council has yet to confirm if this was done. I have requested a meeting with the Midvaal Mayor or delegate of authority but have not received a response to such request.
4. It was further discovered at the pump house that beer labels where blocking the pipeline, this was reported to the Corporate Affairs Director of the local Beer company in Sedibeng.
5. Our concern is that it appears that local business is passing this matter onto the relevant authorities with no concern over the environment. Once again as our property is in proximity to the pipeline and line that has various bursts we are negatively impacted. The matter has been reported to the Department of Environmental Affairs DWS, Green Scorpions and Rand Water. The leaking pipe was repaired 4.5 weeks later on the 13 September 2024.

South African Heritage Resource Agency, 23 September 2024

The following comments are made as a requirement in terms of section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA and must be included in the Final EIA and EMPr:

1. 38(4)a - The SAHRA Development Applications Unit (DAU) has no objections to the proposed development.
2. 38(4)b - The recommendations of the specialists are supported and must be adhered to. No further additional specific conditions are provided for the development.
3. 38(4)c(i) - If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed

<p><u>development, SAHRA DAU (Stephen van den Heever svandenheever@sahra.org.za, Natasha Higgitt 021 202 8660/ nhiggitt@sahra.org.za) must be alerted as per section 35(3) of the NHRA. Noncompliance with this section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule.</u></p> <p>4. <u>38(4)c(ii) - If unmarked human burials are uncovered, the SAHRA DAU (Natasha Higgitt 021 202 8660/ nhiggitt@sahra.org.za) must be alerted immediately as per section 36(6) of the NHRA. Noncompliance with this section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule.</u></p> <p>5. <u>38(4)d - See section 51(1) of the NHRA regarding offences;</u></p> <p>6. <u>38(4)e - The following conditions apply with regards to the appointment of specialists:</u></p> <ol style="list-style-type: none"> a. <u>If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA.</u> b. <u>The Final EIA must be submitted to the SAHRIS application for record purposes.</u> c. <u>The decision regarding the EA application must be submitted to the SAHRIS application for record purposes.</u>

If "NO" briefly explain why no comments have been received
N/A

3.3 GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

3.4 APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix E. The information in this Appendix is to be ordered as detailed below

Appendix 1 – Proof of site notice



Figure 34: Site Notices Placed at Kliprivier Police Station



Figure 35: Site Notice Placed Southwest of the Site

Figure 36: Site Notices Placed North of the Site



Figure 37: Placed at Midvaal De Deur Public Library

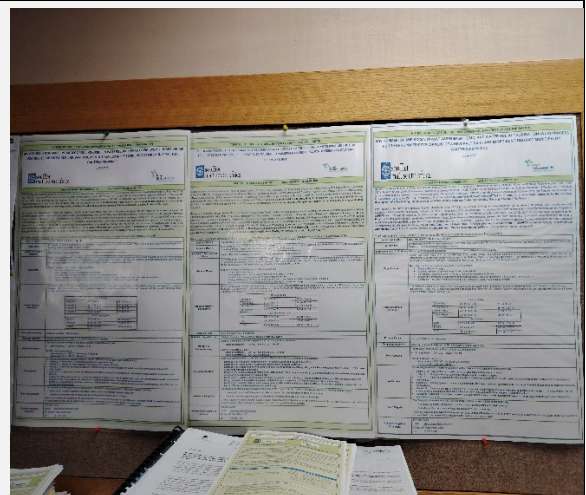


Figure 38: Placed at Midvaal Municipality Main Library

- Appendix 2 – Written notices issued as required in terms of the regulations
- Appendix 3 – Proof of newspaper advertisements
- Appendix 4 – Communications to and from interested and affected parties
- Appendix 5 – Minutes of any public and/or stakeholder meetings
- Appendix 6 - Comments and Responses Report
- Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report
- Appendix 8 – Comments from I&APs on amendments to the BA Report
- Appendix 9 – Copy of the register of I&APs
- Appendix 10 – Stakeholder Engagement Plan

4 SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

- 1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g., technology alternative), the entire Section D needs to be completed
- 2) Each alternative needs to be clearly indicated in the box below
- 3) Attach the above documents in a chronological order

Section D has been duplicated for alternatives	"insert No. of duplicates"	1 times
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(complete only when appropriate)

Section D Alternative No.	"insert alternative number"	(complete only when appropriate for above)
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4.1 WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	
If yes, what estimated quantity will be produced per month?		80m ³
How will the construction solid waste be disposed of (describe)?		
The waste will be temporally stored on site at designated waste bins for different types and finally disposed off at the licenced landfill site.		

Where will the construction solid waste be disposed of (describe)?		
Licenced landfill site		

Will the activity produce solid waste during its operational phase?	YES	
If yes, what estimated quantity will be produced per month?		50m ³

How will the solid waste be disposed of (describe)?		
Waste will be collected by a Service Provider for final disposal at the licenced landfill site.		

Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?	YES	
Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?		
Not Applicable.		

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?		NO
The waste anticipated to be produced on site consist of construction debris, excavated soil, rejected materials, paper bags, empty cartons, empty paint tins and solvent containers, broken glass. The Project will in addition, produce by-product waste from the malting process which includes straw, husk, thin grains and broken grain which cannot be used in the process <u>and may be made into pellets as feed for animals.</u>		
If yes, inform the competent authority and request a change to an application for scoping and EIA.		

Is the activity that is being applied for a solid waste handling or treatment facility?		NO
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:

Dedicated waste bins prepared to accept different waste types will be used on site to promote waste separation at source and recycling. Where possible waste recycling companies will be engaged to collect recyclable materials on site for reuse. Workers on site will also be encouraged to use these dedicated bins to keep the site clean.

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	
If yes, what estimated quantity will be produced per month?		22500 m ³
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the liquid effluent to be generated by this activity(ies)?		NO

Will the activity produce any effluent that will be treated and/or disposed of on site?		NO
If yes, what estimated quantity will be produced per month?		m ³

If yes describe the nature of the effluent and how it will be disposed.
Not Applicable.
Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility?	YES	
If yes, provide the particulars of the facility:		
Facility name:	ERWAT	
Contact person:	Ms Debbie Hlabioa	
Postal address:	P.O Box 13106 Norkem Park	
Postal code:	1631	
Telephone:	(+27) 011 929 7063	Cell:
E-mail:	Debbie.Hlabioa@erwat.co.za	Fax:
Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:		
All Project wastewater will be released into the ERWAT system to be treated at the WWTW.		

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?	YES	
If yes, what estimated quantity will be produced per month?		300m ³
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	YES	NO

*** In principal**

Will the activity produce any effluent that will be treated and/or disposed of onsite?		NO
If yes describe how it will be treated and disposed off.		

Not Applicable.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES	
If yes, is it controlled by any legislation of any sphere of government?	YES	
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		
<p>The findings of the Air Quality Assessment states the following:</p> <ul style="list-style-type: none"> ▪ Ambient air quality data from the Kliprivier AQMS shows compliance with short-term SO₂, NO₂ and CO standards, although short-term peak concentrations can occur. Daily PM₁₀ and PM_{2.5} concentrations as well as 8-hour rolling average O₃ concentrations were in non-compliance with the NAAQS. ▪ Emissions quantification and dispersion modelling show that the New Malting Plant does not result in a substantive concentrations of criteria air pollutants (SO₂, NO₂, CO, VOCs, PM₁₀, and PM_{2.5}). ▪ Increased odour impacts from kilning and an on-site WWTP are possible at receptors located towards the south and south-west of the facility, but the quantum of the impacts is likely to be overestimated by this assessment. ▪ The assessment of impact of the malt plant on ambient air quality (section 5.2) showed minimal off-site impact other than the potential of nuisance odour impacts. On this basis the applicable buffer zone between 100 and 250m is recommended. The current plant layout indicates that there is at least 300 m between the malt plant and the industrial complex access road or the R59, along with the distance to the closest residence (1.1 km), it is the specialist's opinion that an additional buffer zone is not required. Since the purpose of a buffer zone is to restrict more sensitive categories from being developed next to existing facilities, if any additional development occurs within the Graceview Industrial Park around the malt plant, the buffer zone of between 100 m and 250 m should be considered based on the type of industry to be developed (as defined in GDARD, 2017). ▪ The Minister, in terms of Section 21 of the NEMAQA, published a list of activities which result in atmospheric emissions and which are believed to have significant detrimental effects on the environment, human health and social welfare. All scheduled processes as previously stipulated under the Atmospheric Pollution Prevention Act (Act 45 of 1965) were included as listed activities, with additional activities being included in the list. The Listed Activities and Minimum National Emission Standards were first published on the 31st of March 2010 (Government Gazette No. 33064), with a revision of the schedule on the 22nd of November 2013 (Government Gazette No. 37054), and subsequent amendments. <i>The proposed Project includes processes that fall under Category 1: Combustion Installations (where the trigger is 50MW heat input). Based on the net heat input capacity of the CHP and boiler units, the process does not trigger the need for an atmospheric emissions licence.</i> ▪ Section 23 of NEMAQA provides that the Minister or MEC may declare any appliance or device a controlled emitter if the activity results in atmospheric emissions that present a threat to health or the environment and must set emission limits for such activities. Small boilers (any boiler with a design capacity equal to 10 MW but lower than 50 MW net heat input per unit, based on the lower calorific value of the fuel used) were declared as controlled emitters (Notice number 831, 1 November 2013) in terms of section 23 of NEMAQA. In section 23, 'Boiler' is defined as "a combustion appliance designed to heat water". The notice provides for emission standards per fuel type. Based on the per unit net heat input capacity of the boilers (~8MW), the backup boilers are not considered to be controlled emitters. Based on the and the definition of boiler in 		

the legislation along with the understanding of the CHP model, gas combustion rates contemplated at design stage, with a net heat input of 10.7 MW, will require registration as a Controlled Emitter and will have annual emissions measurement and reporting requirements. *It is recommended that the requirement to register as a controlled emitter in terms of Section 23 be reviewed once equipment selection has been finalised for the backup boilers, as well as the CHP.*

- Emissions associated with the normal operation of the new malt facility were estimated based on the Project components and description. Annual total emissions are summarised in **Table 17**. The barley intake, storage and drying were quantified to be the largest contributing source of particulate matter (PM), while the CHP stack emissions were the largest sources of NOx. Gaseous emissions are mostly contributed by vehicle exhaust emissions.

Table 17: Annual Pollutant Emission Rates (by Source Group) for Normal Operations

Source Group	Estimated Annual Average Emission Rates (tonnes/annum)				
	SO2	NOx	CO	VOC	PM10
Barley intake, storage and drying					31.8
Malting Process				102	
Dryer		37.3			0.9
CHP	0.12	53.3			1.2
Boiler		34.2			0.2
Kiln					14.5
Road					0.3
Vehicle Emissions(a)	1.1	27.1	17.9	4.1	2.4
Total	1.2	152	18	106	51

Notes: (a) VOC emission were quantified, but not modelled as they are indicative of a worst-case scenario and likely an overestimation. To account for potential odour effects, measured odour values from a similar facility were utilised.
(b) Vehicle emissions were quantified, but not modelled as they largely occur off-site.

If no, describe the emissions in terms of type and concentration:

Not Applicable.

4.2 WATER USE

Indicate the source(s) of water that will be used for the activity

municipal	Directly from water board	groundwater	river, stream, dam or lake	other	the activity will not use water
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If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate

the volume that will be extracted per month: 9125000 liters

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix

Refer to the Geohydrology Assessment		
Does the activity require a water use permit from the Department of Water Affairs?	YES	
If yes, list the permits required		
Water Use Licence		
If yes, have you applied for the water use permit(s)?	YES	
If yes, have you received approval(s)? (attached in appropriate appendix)		NO

4.3 POWER SUPPLY

Please indicate the source of power supply e.g., Municipality / Eskom / Renewable energy source

Electricity will be generated from the gas-powered CHP units.

If power supply is not available, where will power be sourced from?
Back-up boilers

4.4 ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

During the processing of barley into malt, it is during the kilning phase that the most energy is used. The majority of the heat demand is for kilning process, with grain drying representing the largest heat energy use. At least 90% of the heat demand in a kiln is thought to be associated with the evaporation of water, in order to dry the malt to its final moisture content.

The malting plant kilns will be fitted with static glass tube heat exchangers to recover some (about 20%) vaporization energy of water (latent heat) from the air off from the kiln to pre-heat the ambient air coming into the kiln. The second plan for increased energy recovery that will be deployed by malting plant is by installing open cycle heat pumps which will suit the malting process. Open cycle heat pumps differ from closed cycle heat pumps in that they are able to use the water evaporated from the malt as the means to recover energy. A higher energy recovery factor can be achieved than possible with closed heat pumps (about 43%).

The malting plant's energy recovery from the kilning process through fitting glass tube heat exchangers and possible installation of open cycle heat pumps achieves more than 60% recovery of the energy used in the kiln. The final heat source will be from the CHP, optimizing to a very high level the global energy cycle. CHP will produce electricity that will be used by the heat pumps. Complementary heat will be coming from cooling of the CHP.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

Back-up boilers have been taken into account if the CHP is not available.

5 SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i)).

5.1 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

- Odour impacts.
- Effluent impacts.
- Noise impacts.
- Impact on traffic.
- Malfunctioning of wastewater infrastructure.
- Employment opportunities.
- Regional economy upliftment.
- Dewatering/abstraction activity within the dolomitic area of the Project.
- Height restrictions for silos.
- VOC emissions and their control.
- Role of the baghouses in the production process.
- The size of the pellet that will be used for animal feed, and if are there any additional carcass for the animal feed.
- Enquiry about the role of kilning in the production process.
- Enquiry about the covering of the conveyor belts that will be distributing the malt to Heineken Brewery and usage of gas to generate electricity.
- Registration of 6MW boiler consideration using Midvaal By-laws.
- Dolomitic Stability Investigation and approval by Council of Geoscience and Midvaal local Municipality.
- Stormwater Management Plan and approval by Midvaal Local Municipality .
- Traffic Impact Study approval by Midvaal Local Municipality.
- All comments from Public Participation Process must be included in the final report.
- Appointment of consulting engineers for the electrical design, supervision, and commissioning of the reticulation network as well as the contractor for the construction works and approval by Midvaal Local Municipality.
- Rand Water must be engaged for bulk water.
- Capacity of electricity supply.
- Capacity of potable water and wastewater supply.
- Classifications of alcohol as organic chemicals.
- Estimation of particulate matter (PM) and volatile organic compounds (VOCs) from a malting plant.
- Compliance with Ambient Air Quality Standards.
- Odour management.
- Particulate matter emissions.
- Impact of other local sources.
- Long-term monitoring and reporting.

- [Buffer zones.](#)
- [Cumulative impact assessment.](#)
- [Mitigation measures.](#)

Refer to Comments and Response Report for more information in Appendix E.

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included) (A full response must be provided in the Comments and Response Report that must be attached to this report):

- Odour impacts are minimal due to the projects using a germination process instead of fermentation. An Odour Complaints Register will be kept on site and complaints dealt with appropriately.
- Effluent produced from the Project is organic due to barley and water interacting under different temperatures. This effluent will be discharged responsibly to comply with the legislation and avoid pollution.
- A Noise Complaints Register will be kept on site to deal with complaints. In addition, the noise levels will be kept at 55dBA (as recommended by the IFC) for day-time residential use; and 45dBA (as recommended by the IFC) for night-time residential use.
- There will be additional traffic to site and the existing intersections will be able to accommodate this additional traffic. Traffic impacts will be managed by implementing mitigation measures.
- Local authorities are aware of the Project and a dedicated Community Liaison Officer will be appointed to mediate between the community, Contractor and the Developer to minimise conflict related to employment opportunities. One of the objectives of the Project is to provide employment opportunities the eligible people.
- I&APs are encouraged to engage with the local authorities and entities regarding the current persisting environmental impacts. The Project will endeavour to minimise environmental and social impacts.
- A Dolomite Stability Report will be submitted to the Midvaal Municipality for approval prior the development of the Project.
- The Geohydrological Assessment does not foresee any major impacts associated with the proposed dewatering/abstraction activity within the dolomitic area of the Project.
- The Project will comply with height restrictions of the Midvaal Local Municipality by lodging necessary applications where the heights are exceeded.
- Response to Willowbrooke - All associated environmental impacts have been duly considered for the proposed Project. These potential environmental impacts were further detailed during the Public Participation meetings held on 11/09/2024 and 12/09/2024. Further note that the activities of a malting plant differ from a brewery and therefore cannot be used to draw a comparison. The current infrastructure issues described in the email are to be addressed with the relevant parties.
- [The Dolomite Study was conducted for the Project and attached as **Appendix G11.**](#)
- [The Stormwater Management Plan and Traffic Impact Assessment has been submitted to the Municipality for comment and will be approved as part of the building approval process.](#)
- [Formal engagements have been made with Midvaal Local Municipality: Electrical Department and Royal HaskoningDHV on behalf of Soufflet Malt. The relevant approvals on the electrical network design and equipment will be sought from Midvaal Local Municipality before implementation.](#)

- Soufflet Malt is aware of the potential water and sanitation constraints and have been engaging with ERWAT, Rand Water and Midvaal Local Municipality on these matters since. Various meetings have taken place with the Municipality and minutes were forwarded to Ms Erane Viljoen and Ms Beaula Tshabalala on 11 October 2024. A letter from ERWAT dated 8 November 2023, confirming their support of the Soufflet Malt development as well as a capacity assessment completed by Royal HaskoningDHV on 02 April 2024. was also forwarded in the email of 11 October 2024.
- There are no alcohols used or produced from the malting process.
- The generation of PM from these sources has been considered in the Air Quality Impact Assessment (AQIA).
- VOCs can arise from the malting process and this was quantified using a conservative emission factor as set out in section 4.1.1 of the AQIA.
- To ensure that the facility does not have a significant ambient impact over and above the baseline impact, fence-line ambient monitoring and source monitoring is proposed in sections 5.7.1 and 5.7.2 of the AQIA. Facility-wide inspections will be undertaken to ensure that no excessive emissions occur is proposed in section 5.7.2 of the AQIA and the ESMP. A Maintenance Management Plan will be compiled that will outline good housekeeping and operational practices related to the Project.
- The AQIA and ESMP recommends that an odour complaints register be kept, and all complaints received noted, investigated and corrective action taken, where appropriate.
- Dust management is critical to the safe operation of the facility due to the explosion hazard of fine dust particles. Abatement is to be installed to ensure that emissions are below 10mg/m³, as set out in the AQIA. It must be noted that there is no PM from the drying process. The malt plant is equipped with a de-dusting system based on bag filters.
- The Applicant's (Soufflet Malt) designated Environmental Manager should join the Sedibeng District Municipality (SDM) Integrated Task Team (ITT) and the Multi-Stakeholder Reference Group (MSRG) meetings to collaborate with local government and industries to ensure alignment in management, measurement, and mitigation of air pollution.
- Buffer zones - the sensitive receptors identified are listed in Table 1-1 of the AQIA. These receptors do not fall within the recommend buffer zone. It is acknowledged that communities should be protected from potential emissions and measures to do so have been proposed in sections 5.7.1. and 5.7.2. of the AQIA and in the ESMP.
- Cumulative impacts are acknowledged by considering the measured ambient pollutant concentrations from the Kliprivier air quality monitoring station. The ambient data indicates that PM_{2.5}, PM₁₀ and ozone standards are exceeded in the area. The potential impact from PM emissions from the facility is shown in section 5.1.5.2 of the AQIA. While the PM impacts are expected to result in exceedences of the NAAQS, the impact would be cumulative to the exceedences already being measured, as acknowledged by the impact significance ratings in section 5.6 of the AQIA. Measures to limit PM emissions from the facility are proposed in sections 5.7.1. and 5.7.2. of the AQIA.
- A recommendation for the development of a detailed Air Quality Management Plan (AQMP) has been included in this report and the ESMP which will include detailed plans, stakeholder engagement, and strategies for regular reviews of mitigation measures to be developed to ensure effective air quality management post-implementation.

5.2 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION AND OPERATIONAL PHASES

Briefly describe the methodology utilised in the rating of significance of impacts

5.2.1 Impact Assessment Methodology

The potential environmental impacts associated with the Project will be evaluated according to its nature, extent, duration, intensity, probability and significance of the impacts, whereby:

- **Nature:** A brief written statement of the environmental aspect being impacted upon by a particular action or activity;
- **Extent:** The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales. This is often useful during the detailed assessment phase of a Project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- **Duration:** Indicates what the lifetime of the impact will be;
- **Intensity:** Describes whether an impact is destructive or benign;
- **Probability:** Describes the likelihood of an impact actually occurring; and
- **Cumulative:** In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

This approach incorporates two aspects for assessing the potential significance of impacts, namely occurrence and severity, which are further sub-divided as follows:

Table 18: Occurrence and Severity Assessment

Occurrence		Severity	
Probability of occurrence	Duration of occurrence	Scale/extent of impact	Magnitude (severity) of impact

To assess each of these factors for each impact, the following four ranking scales are used:

Table 19: Criteria for the Ranking of Impacts

Probability	Duration
5 - Definite/ don't know	5 - Permanent
4 - Highly probable	4 - Long-term
3 - Medium probability	3 - Medium-term (8 - 15 years)
2 - Low probability	2 - Short-term (0 - 7 years) (impact ceases after the operational life of the activity)
1 - Improbable	1 - Immediate
0 - None	0 - None
Scale	Magnitude
5 - International	10 - Very high
4 - National	8 - High

3 - Regional	6 - Moderate
2 - Local	4 - Low
1 - Site only	2 - Minor
0 – None	0 - None

Once these factors have been ranked for each impact, the significance of the two aspects, occurrence and severity, must be assessed using the following formula:

SP (significance points) = (magnitude + duration + scale) x probability

The maximum value is 100 significance points (SP). The impact significance is then rated as follows:

Table 20: Impact significance:

SP >75	Indicates high environmental significance	An impact which could influence the decision about whether or not to proceed with the project regardless of any possible mitigation.
SP 30 – 75	Indicates moderate environmental significance	An impact or benefit which is sufficiently important to require management and which could have an influence on the decision unless it is mitigated.
SP <30	Indicates low environmental significance	Impacts with little real effect and which should not have an influence on or require modification of the project design.
+	Positive impact	An impact that constitutes an improvement over pre-project conditions.

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

No impacts to the freshwater environment or freshwater features in the area surrounding the study area are envisioned and the risk profile to the freshwater environment is considered low to negligible. Should the Project, as proposed, remain within the demarcated footprint (study area) as provided by the Applicant, the malt plant and construction and operation thereof will not result in an impact (new or cumulative) on any freshwater features in the vicinity of the study area. The proposed Project in its current form is associated with a low risk to the freshwater environment.

5.2.1 Geotechnical

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Earthworks and construction.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Formation of sinkholes. 	<p>Duration: Permanent (-5) Scale: Site (-1) Magnitude: High (-8) Probability: High (-4)</p> <p>Significance: Moderate (-56)</p>	<ul style="list-style-type: none"> A Dolomite Stability Report should be compiled prior to building plan approval. A Dolomite Risk Management Plan must be compiled by a competent person and submitted to the Council for Geoscience (CGS) for their approval. A competent person must also inspect the excavation during construction and submit a construction report to the CGS. Portions of the site is classified as dolomite D4 area designation, as such a Competence Level 4 [L4 Geo-professional] will be included in the team. 	<p>Duration: Long-term (-4) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Medium (-3)</p> <p>Significance: Moderate (-33)</p>	Medium

5.2.2 Geohydrology

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Construction	<p>Aspect: Earthworks and construction.</p> <p>Impacts: Vadose zone soils and subsequent groundwater table:</p> <ul style="list-style-type: none"> Disturbing vadose zone during soil excavations/construction activities. 	<p>Duration: Medium-term (-3)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Moderate (-6)</p> <p>Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Only excavated areas apply to the Project area. Backfill the material in the same order it was excavated to reduce contamination of deeper soils with shallow oxidised soils. Cover excavated soils with a temporary liner to prevent contamination. Retain as much indigenous vegetation as possible. Exposed soils are to be protected using a suitable covering or revegetating. 	<p>Duration: Medium-term (-3)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Low (-4)</p> <p>Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Medium
Construction	<p>Aspect: Earthworks and construction.</p> <p>Impacts: Vadose zone soils and subsequent groundwater table:</p> <ul style="list-style-type: none"> Poor quality seepage from machinery used to excavate soils. Oil, grease, and fuel leaks could lead to hydrocarbon contamination of the vadose zone - which could percolate into the shallow aquifer. 	<p>Duration: Medium-term (-3)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Moderate (-6)</p> <p>Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Park heavy machinery in lined areas and place drip trays under vehicles at the site. Visual soil assessments for signs of contamination during construction (monthly). 	<p>Duration: Medium-term (-3)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Low (-4)</p> <p>Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Earthworks and construction.</p> <p>Impacts: Groundwater aquifer:</p> <ul style="list-style-type: none"> Poor quality seepage from machinery used to excavate soils. Oil, grease, and fuel leaks could lead to hydrocarbon contamination of the vadose zone - which could percolate into the shallow aquifer. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Park heavy machinery in lined areas and place drip trays under vehicles at the site. Have fuel and oil spill cleanup kits on site and clean up these areas immediately. Ensure that building material stockpiles are covered with a suitable temporary cover or placed in bunded areas to reduce poor-quality seepage probability. Visual soil assessments for signs of contamination during construction (monthly). 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Medium
<i>Operations</i>	<p>Aspect: Storage of wastewater and processing thereof.</p> <p>Impact: Vadose zone soils:</p> <ul style="list-style-type: none"> Poor quality seepage from the on-site effluent storage facilities and WWTP. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Park heavy machinery in lined areas and place drip trays under vehicles at the site. Visual soil assessments for signs of contamination on site. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Medium
<i>Operations</i>	<p>Aspect: Vehicles and trucks are parked and accessing the site.</p> <p>Impact:</p>	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p>	<ul style="list-style-type: none"> Have fuel cleanup kits available on site. Ensure that stormwater is monitored annually for contaminants. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
	<p>Vadose zone soils:</p> <ul style="list-style-type: none"> Poor quality runoff into the environment (if hydrocarbon contamination takes place at the site). The impact will be on local soils as there are no watercourses associated with the site. 	<p>Significance: Moderate (-50)</p>		<p>Significance: Low (-16)</p>	
Operations	<p>Aspect: Dewatering.</p> <p>Impact: Regional groundwater table/groundwater aquifer:</p> <ul style="list-style-type: none"> Over abstraction of groundwater at the proposed boreholes at the site. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Do not abstract more than what is required, or as determined by the borehole sustainable yield testing. Ensure that the borehole collar is protected, to prevent any environmental runoff into the borehole. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Medium

5.2.3 Hydrology

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Construction	<p>Aspect: Earthworks and construction.</p> <p>Impacts: Vadose zone soils and subsequent groundwater table:</p> <ul style="list-style-type: none"> Disturbing vadose zone during soil excavations/construction activities. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Only excavated areas apply to the Project area. Backfill the material in the same order it was excavated to reduce contamination of deeper soils with shallow oxidised soils. Cover excavated soils with a temporary liner to prevent contamination. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Improbable (-1)</p> <p>Significance: Low (-8)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none"> Retain as much indigenous vegetation as possible. Exposed soils are to be protected using a suitable covering or revegetating. 		
Construction	<p>Aspect: Earthworks and construction</p> <p>Impacts: Vadose zone soils and subsequent groundwater table:</p> <ul style="list-style-type: none"> Poor quality seepage from machinery used to excavate soils. Oil, grease, and fuel leaks could lead to hydrocarbon contamination of the vadose zone - which could percolate into the shallow aquifer. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Park heavy machinery in lined areas and place drip trays under vehicles at the site. Visual soil assessments for signs of contamination during construction (monthly). 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Medium
Operations	<p>Aspect: Storage of wastewater and processing thereof.</p> <p>Impact: Vadose zone soils:</p> <ul style="list-style-type: none"> Poor quality seepage from the on-site effluent storage facilities and WWTP. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Park heavy machinery in lined areas and place drip trays under vehicles at the site. Visual soil assessments for signs of contamination on site. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: [Low (-16)]</p>	Medium
Operations	<p>Aspect: Vehicles and trucks are parked and accessing the site.</p> <p>Impact: Vadose zone soils:</p>	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance:</p>	<ul style="list-style-type: none"> Have fuel cleanup kits available on site. Ensure that stormwater is monitored annually for contaminants. 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance:</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
	<ul style="list-style-type: none"> Poor quality runoff into the environment (if hydrocarbon contamination takes place at the site). The impact will be on local soils as there are no watercourses associated with the site. 	Moderate (-50)		Low (-16)	

5.2.4 Noise

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Construction	<p>Aspect: Construction activities: day-time.</p> <p>Impacts: Noise impacts.</p>	<p>Duration: Short-term (-2) Scale: Local (-2) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	<ul style="list-style-type: none"> Considering the ambient sound levels measured, the developmental character of the area as well as audible observations, the recommended day-time zone sound level is 50dBA. The upper noise limit at NSR would be 55dBA (as per IFC"s recommended noise limit for residential use). All employees and contractors should receive Health and Safety induction that includes an environmental awareness component (noise). This is to allow employees and 	<p>Duration: Short-term (-2) Scale: Local (-2) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			<p>contractors to the potential noise risks that activities (especially night-time activities) pose to the realise surrounding environment.</p> <ul style="list-style-type: none"> ▪ The Applicant must implement a line of communication (i.e., a helpline where complaints could be lodged). All potential sensitive receptors should be made aware of these contact numbers, or alternative means to communicate issues. The plant should maintain a commitment to the local community and respond to concerns in an expedient fashion. Sporadic and legitimate noise complaints could develop and if valid, should be investigated. Feedback must be provided to the affected stakeholder(s) with details of any steps taken to mitigate the impact (if valid complaint) or preventative steps to minimise this from happening again. 		

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none"> The plant must investigate any reasonable and valid noise complaint if registered by a receptor staying within 1,000m from the processing plant. 		
Construction	<p>Aspect: Construction activities: night-time.</p> <p>Impacts: Noise impacts.</p>	<p>Duration: Short-term (-2) Scale: Regional (-3) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-18)</p>	<ul style="list-style-type: none"> Considering the ambient sound levels measured, the developmental character of the area as well as audible observations, the recommended night-time zone sound level was 40dBA, with a night-time noise limit of 45dBA. Refer to mitigation measure include for noise impacts during the day-time. 	<p>Duration: Short-term (-2) Scale: Regional (-3) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-18)</p>	Medium
Operations	<p>Aspect: Operational activities: day-time.</p> <p>Impacts: Noise impacts.</p>	<p>Duration: Permanent (-5) Scale: Local (-2) Magnitude: Minor (-2) Probability: Low (-2)</p> <p>Significance: Low (-18)</p>	<ul style="list-style-type: none"> Considering the ambient sound levels measured, the developmental character of the area as well as audible observations, the recommended daytime zone sound level is 50dBA. The upper noise limit at NSR would be 55dBA (as per IFC's recommended 	<p>Duration: Permanent (-5) Scale: Local (-2) Magnitude: Minor (-2) Probability: Low (-2)</p> <p>Significance: Low (-18)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			<p>noise limit for residential use).</p> <ul style="list-style-type: none"> The continued commitment to consider the potential sensitivity of the surrounding communities to increased noises. Management measures as highlighted for the construction phase should continue. The plant must investigate any reasonable and valid noise complaint if registered by a receptor staying within 1,000m from the plant. 		
<i>Operations</i>	<p>Aspect: Operational activities: night-time.</p> <p>Impacts: Noise impacts.</p>	<p>Duration: Permanent (-5) Scale: Regional (-3) Magnitude: Moderate (-6) Probability: Low (-2)</p> <p>Significance: Low (-28)</p>	<ul style="list-style-type: none"> Considering the ambient sound levels measured, the developmental character of the area as well as audible observations, the recommended night-time zone sound level was 40dBA, with a night-time noise limit of 45dBA. The continued commitment to consider the potential sensitivity of the surrounding communities to increased 	<p>Duration: Permanent (-5) Scale: Regional (-3) Magnitude: Moderate (-6) Probability: Low (-2)</p> <p>Significance: Low (-28)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			<p>noises. Management measures as highlighted for the construction phase should continue. The plant must investigate any reasonable and valid noise complaint if registered by a receptor staying within 1,000m from the plant.</p>		

5.2.5 Traffic

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Construction	<p>Aspect: Construction activities.</p> <p>Impact:</p> <ul style="list-style-type: none"> Deterioration of road network condition. 	<p>Duration: Long-term (-4) Scale: Local (-2) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-60)</p>	<ul style="list-style-type: none"> The condition of the R550 East/West, R550 North/South and access road to be monitored by the relevant parties and remedial actions to be implemented to maintain an acceptable road conditions. The movement of materials and equipment by trucks can be phased through the day to the reduce the impact the trucks have on traffic congestion. The delivery of materials/equipment by abnormal vehicles, if required, should be scheduled during off-peak periods in order to have the least impact on traffic conditions. The road safety conditions to be monitored by Traffic Police on the R550 East/West and R550 North/South intersection, this will increase the road safety and minimize the risk of accidents along this section of the road. The proposed dedicated taxi parking layby near the facility gate will reduce congestion on the R550 East/West and R550 	<p>Duration: Long-term (-4) Scale: Local (-2) Magnitude: Minor (-2) Probability: Definite (-5)</p> <p>Significance: Moderate (-40)</p>	Medium
Construction	<p>Aspect: Construction activities.</p> <p>Impact:</p> <ul style="list-style-type: none"> Increase in traffic volumes. 	<p>Duration: Long-term (-4) Scale: Local (-2) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-60)</p>	<ul style="list-style-type: none"> The road safety conditions to be monitored by Traffic Police on the R550 East/West and R550 North/South intersection, this will increase the road safety and minimize the risk of accidents along this section of the road. The proposed dedicated taxi parking layby near the facility gate will reduce congestion on the R550 East/West and R550 	<p>Duration: Long-term (-4) Scale: Local (-2) Magnitude: Minor (-2) Probability: Definite (-5)</p> <p>Significance: Moderate (-40)</p>	Medium
Construction	<p>Aspect: Construction activities</p> <p>Impact Deterioration of road safety conditions.</p>	<p>Duration: Long-term (-4) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-55)</p>	<ul style="list-style-type: none"> The proposed dedicated taxi parking layby near the facility gate will reduce congestion on the R550 East/West and R550 	<p>Duration: Long-term (-4) Scale: Site (-1) Magnitude: Minor (-2) Probability: Definite (-5)</p> <p>Significance: Moderate (-35)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities.</p> <p>Impact: Environmental impact - emissions.</p>	<p>Duration: Long-term (-4) Scale: National (-4) Magnitude: Low (-4) Probability: High (-4)</p> <p>Significance: Moderate (-48)</p>	<p>North/South intersection and R550 East/West intersection with the access road (Unknown road).</p> <ul style="list-style-type: none"> The transportation of employees either with company shuttle or a combination of a public taxi and a shuttle service will reduce the congestion on the local road network as dedicated vehicles will be transporting employees to the facility rather than general public transport vehicles which may be transporting fewer employees each resulting in increased volumes. The provision of the dedicated taxi parking layby near the facility gate will also reduce the number of pedestrians on the R550 East/West, R550 North/South, and access road, thereby reducing road safety risks to both pedestrians and drivers. The suggested provision of Non-Motorised Transport (NMT) facilities in the form of a paved sidewalk on the property frontage and along the access road will also increase road safety for both pedestrians and drivers as well as improve the pedestrian-friendliness of the area as a whole. 	<p>Duration: Long-term (-4) Scale: National (-4) Magnitude: Minor (-2) Probability: High (-4)</p> <p>Significance: Moderate (-40)</p>	Medium

5.2.6 Heritage and Palaeontology

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities.</p> <p>Impact:</p> <ul style="list-style-type: none"> Loss of fossil heritage by destruction, moving and sealing in fossils below ground surface so that they are no longer available for scientific research. 	<p>Duration: Permanent (-5) Scale: Site (-1) Magnitude: Moderate (-6) Probability: High (-4)</p> <p>Significance: Moderate (-48)</p>	<ul style="list-style-type: none"> If significant fossil remains are discovered during any phase of construction, either on the surface or exposed by excavations the Chance Find Protocol must be implemented by the Environmental Site Officer. <u>If a chance find is made, the person responsible for the find must immediately stop working, and all work in the immediate vicinity of the find must stop as well.</u> <u>The individual who discovered the item must immediately notify his or her direct supervisor, who must then notify his or her management and the ESO. The ESO must notify the relevant Heritage Agency (South African Heritage Resources Agency, SAHRA) of the discovery (Contact information: SAHRA DAU (Stephen van den Heever svandenheever@sahra.org.za, Natasha Higgitt 021 202 8660/nhiggitt@sahra.org.za). Web address: www.sahra.org.za). Photographs of the find from various perspectives, as well as GPS coordinates, must be submitted to the Heritage Agency.</u> <u>Within 24 hours of the discovery, a preliminary report must be sent to the Heritage Agency, which must include the following: 1) the date of finding; 2) a description of the discovery; and 3) a description of the fossil and its context</u> 	<p>Duration: Permanent (-5) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-20)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			<p>(depth and position of the fossil), as well as GPS coordinates.</p> <ul style="list-style-type: none"> If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA DAU (Stephen van den Heever svandenheever@sahra.org.za, Natasha Higgitt 021 202 8660/ nhiggitt@sahra.org.za) must be alerted as per section 35(3) of the NHRA. Noncompliance with this section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule. If unmarked human burials are uncovered, the SAHRA DAU (Natasha Higgitt 021 202 8660/ nhiggitt@sahra.org.za) must be alerted immediately as per section 36(6) of the NHRA. Noncompliance with this section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule. 		
Construction	<p>Aspect Construction activities.</p> <p>Impact: Damage/destruction to archaeological heritage.</p>	<p>Duration: Permanent (-5) Scale: Site (-1) Magnitude: Minor (-2) Probability: Medium (-3)</p> <p>Significance: Low (-24)</p>	<ul style="list-style-type: none"> Implement a Chance to Find procedure in case where possible heritage finds are uncovered. 	<p>Duration: Permanent (5) Scale: Site (1) Magnitude: Low (2) Probability: Low (2)</p> <p>Significance: Low (-16)</p>	Medium

5.2.7 Socio-economic

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Direct and indirect employment opportunities and skills development. 	<p>Duration: Short-term (2) Scale: Regional (3) Magnitude: Low (4) Probability: Medium (3)</p> <p>Significance: Low (+27)</p>	<ul style="list-style-type: none"> Prioritise hiring from the local community to boost local employment. The Developers should be committed to involving and benefiting the communities surrounding the Project, contributing to their development and growth. The communities which are most in need of employment on a local level should be considered for employment before outsourcing. Engage proactively with local stakeholders and implement transparent hiring practices to ensure equitable distribution of employment opportunities. Regularly communicate with the community about job opportunities and Project progress. 	<p>Duration: Short-term (2) Scale: Local (2) Magnitude: Moderate (6) Probability: High (4)</p> <p>Significance: Moderate (+40)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Economic multiplier effects. 	<p>Duration: Short-term (2) Scale: Regional (3) Magnitude: Low (4) Probability: Medium (3)</p> <p>Significance: Low (+27)</p>	<ul style="list-style-type: none"> Preference should be given to local suppliers, where applicable. Establishing liaison and communication structures with the district and local government structures. It is recommended that a local procurement policy be adopted by the Developer to maximise the benefit to the local economy, where feasible. Create job opportunities, boost local economies by supporting business activities, and contribute to government tax revenues through the development of the Project. Prior to the start of the construction contractor procurement, a database of local companies, specifically Historically Disadvantaged (HD) companies, that qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies, etc) should be identified and informed about the tender process and invited to bid on Project-related work, if applicable. Engage with local authorities and business organisations to investigate the feasibility of obtaining construction materials, goods, and products from local suppliers, where possible. 	<p>Duration: Short-term (2) Scale: Local (2) Magnitude: Moderate (6) Probability: High (4)</p> <p>Significance: Moderate (+40)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Influx of jobseekers and change in population. 	<p>Duration: Short-term (-2) Scale: Regional (-3) Magnitude: Low (-4) Probability: High (-4)</p> <p>Significance: Moderate (-36)</p>	<ul style="list-style-type: none"> The communities which are most in need of employment on a local level should be considered for employment before outsourcing. Making the surrounding landowners aware of the dangers associated with the influx of workers during the construction period. Encourage employees to stop working when a workplace is considered unsafe and/or to prevent unsafe actions. Prioritising local hiring to reduce the influx of external job seekers and support community development. 	<p>Duration: Short-term (-2) Scale: Local (-2) Magnitude: Low (-4) Probability: Medium (-3)</p> <p>Significance: Low (-24)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Safety and security. 	<p>Duration: Short-term (-2) Scale: Local (-2) Magnitude: Moderate (-6) Probability: Medium (-3)</p> <p>Significance: Moderate (-30)</p>	<ul style="list-style-type: none"> Safety awareness and training as well as positive behaviour reinforcement. Improving system monitoring and analysis to improve risk management. Making the surrounding landowners aware of the dangers associated with the influx of workers during the construction period. Ensuring that access cannot be gained to surrounding properties. Encourage employees to stop working when a workplace is considered unsafe and/or to prevent unsafe actions. Access in and out of the construction area should be strictly controlled. The Contractor must provide adequate firefighting equipment on site and provide firefighting training to selected construction staff. Have clear rules and regulations for access to the proposed site to control loitering. A comprehensive employee induction programme would cover land access protocols, fire management and road safety must be prepared. A Community Liaison Officer should be appointed. The grievance mechanism should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process. 	<p>Duration: Short-term (-2) Scale: Local (-2) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Nuisance impacts, including noise and dust. 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-40)</p>	<ul style="list-style-type: none"> Plant equipment such as generators, compressors, concrete mixers, and vehicles should be kept in good working order and, where possible, equipped with effective exhaust mufflers. Implement a construction communication plan to keep the local community informed about construction schedules, disruptions, and progress. Provide clear signage and alternative routes to manage traffic effectively and ensure safe pedestrian access. Schedule construction activities during less disruptive times, where possible. Engage with local businesses and residents to understand and address specific concerns related to the construction. Rapid response team to address any emergent issues related to construction activities, ensuring quick resolution. Dust suppression measures should be implemented on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers. 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Low (4) Probability: High (-4)</p> <p>Significance: Low (-28)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Operations	<p>Aspect: Operational activities.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Direct and indirect employment opportunities. 	<p>Duration: Long-term (4) Scale: Regional (3) Magnitude: Moderate (6) Probability: Medium (3)</p> <p>Significance: Moderate (+39)</p>	<ul style="list-style-type: none"> Prioritise hiring from the local community for all available positions. This will ensure that the benefits of employment are directly felt within the local community. In cases where highly skilled expertise is required, provide provisions for skills transfer. This will facilitate knowledge sharing within the local workforce and enhance the overall skill level of the community. Encourage the involvement of local businesses in providing materials, goods, and services during the operational phase of the Project. This can stimulate entrepreneurial growth and create indirect job opportunities. 	<p>Duration: Long-term (4) Scale: Regional (3) Magnitude: High (8) Probability: High (4)</p> <p>Significance: Moderate (+60)</p>	Medium
Operations	<p>Aspect: Operational activities.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Economic multiplier effects. 	<p>Duration: Long-term (4) Scale: Regional (3) Magnitude: Low (4) Probability: Medium (3)</p> <p>Significance: Moderate (+33)</p>	<ul style="list-style-type: none"> Refer to construction mitigation measures for economic multiplier effects. 	<p>Duration: Long-term (4) Scale: Regional (3) Magnitude: Moderate (6) Probability: High (4)</p> <p>Significance: Moderate (+52)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Operations	<p>Aspect: Operational activities</p> <p>Impacts:</p> <ul style="list-style-type: none"> Occupational health and safety. 	<p>Duration: Long-term (-4) Scale: Local (-2) Magnitude: Moderate (-6) Probability: High (-4)</p> <p>Significance: Moderate (-48)</p>	<ul style="list-style-type: none"> Develop an Occupation Health and Safety Plan as well as a Community Health and Safety Plan for the Project. Conduct regular safety training and drills for all employees and contractors. Provide personal protective equipment (PPE) and ensure its proper use. Establish health monitoring programs to detect and manage occupational illnesses. Implement safety protocols and emergency response plans. Foster a safety culture through continuous education and awareness programs. 	<p>Duration: Long-term (-4) Scale: Local (-2) Magnitude: Low (-4) Probability: Medium (-3)</p> <p>Significance: Moderate (-30)</p>	Medium

5.2.8 Air Quality

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Operations	<p>Aspect: Operation of the malt plant.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Increase in hourly and annual ambient NO₂ concentrations. 	<p>Note - For this study it was assumed that the control equipment such as filters were part of the design of the facility and not additional mitigation. The impacts were evaluated</p>	<p>It is recommended that an annual short-term (14-day) monitoring using passive diffusive sampling techniques for NO₂, VOCs, and PM₁₀ should be undertaken at three locations on the site boundary to ensure that compliance with NAAQS is maintained at the site boundary. This should be</p>	<p>Duration: Short-term (-2) Scale: Local (-2) Magnitude: Minor (-2) Probability: Medium (-3)</p> <p>Significance: Low (-18)</p>	Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Operations</i>	<p>Aspect: Operation of the malt plant.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Increase in hourly and annual ambient PM concentrations. 	<p>under conservative operation assumptions, which are likely to overestimate the air quality impacts of the facility. The ratings therefore apply to a conservative scenario which includes mitigation and therefore no additional mitigation is considered necessary.</p>	<p><u>undertaken prior to commissioning – to establish a site baseline - and after commissioning to show the cumulative impact of the facility.</u></p> <ul style="list-style-type: none"> It is recommended that the facility monitor and maintain records of the frequency and the methods used to control fugitive dust emissions and maintain records of all fugitive dust complaints received and the corrective action taken in response to the complaint. It is further recommended that facility-wide inspections of all sources of fugitive emission sources be conducted and if any of the sources of dust are not being reasonably controlled, corrective action be taken. It is recommended that a comprehensive air quality management plan (AQMP) be developed that incorporates the recommendations contained in this ESMP. The AQMP should contain detailed plans for the implementation of all the recommendations contained in this ESMP and Air Quality Impact Assessment, provide for stakeholder engagement and detailed plans for the management of complaints. The AQMP should include provisions for regular reviews of mitigation measures. It is recommended that the AQMP be submitted to the regulator for review and approval prior to the commissioning of the facility. 		Medium

Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Operations</i>	<p>Aspect: Operation of the malt plant.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Odour impacts at nearby receptors. 		<ul style="list-style-type: none"> It is recommended that an odour complaints register be kept, and all complaints received noted, investigated and corrective action taken, where appropriate. Any corrective action taken should be noted in the register. <u>It is recommended that, if an on-site WWTP is commissioned, it be designed using best practice principles to reduce the impact of odours on surrounding communities.</u> 	<p>Duration: Short-term (-2) Scale: Local (-2) Magnitude: Low (-4) Probability: Medium (-3)</p> <p>Significance: Low (-24)</p>	Medium

Project related

<p><i>Operations</i></p>	<p>Aspect: Operation of the malt plant.</p> <p>Impacts:</p> <ul style="list-style-type: none"> ▪ Nuisance dust impacts at nearby receptors. 		<ul style="list-style-type: none"> ▪ It is recommended that the facility monitor and maintain records of the frequency and the methods used to control fugitive dust emissions and maintain records of all fugitive dust complaints received and the corrective action taken in response to the complaint. ▪ <u>It is further recommended that facility-wide inspections of all sources of fugitive emission sources be conducted and if any of the sources of dust or odours are not being reasonably controlled, corrective action be taken.</u> ▪ <u>It is recommended that maintenance of the baghouses be performed if visible emissions exceed 0% opacity. In addition, the pressure drop across the baghouses is required to be maintained within manufacturer and the operation and maintenance manual specifications.</u> ▪ <u>It is recommended that performance tests on the baghouse(s) to ensure that the emission limit of 10 mg/m³ is not exceeded.</u> ▪ <u>PM_{2.5} as well as PM₁₀ should be measured to provide more accurate data for future assessments. It is recommended that as minimum the following emission sources be monitored periodically for PM emissions:</u> <ul style="list-style-type: none"> ○ <u>all baghouse sources; and,</u> ○ <u>kilns.</u> ▪ <u>It is further recommended that performance testing be conducted to ensure that the following equipment achieve the performance standard set by the manufacturer for NOx emissions:</u> <ul style="list-style-type: none"> ○ <u>CHP units; and,</u> 	<p>Duration: Short-term (-2)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Low (-2)</p> <p>Probability: Low (-2)</p> <p>Significance: Low (-10)</p>	<p>Medium</p>
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Project related

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			<ul style="list-style-type: none"> ○ <u>boilers.</u> ▪ <u>It is recommended that a comprehensive air quality management plan (AQMP) be developed. The AQMP should contain detailed plans for the implementation of all the recommendations contained in the ESMP and Air Quality Impact Assessment, provide for stakeholder engagement and detailed plans for the management of complaints. The AQMP should include provisions for regular reviews of mitigation measures. It is recommended that the AQMP be submitted to the regulator for review and approval prior to the commissioning of the facility.</u> ▪ <u>A Maintenance Management Plan must be compiled that will outline good housekeeping and operational practices related to dust and emissions.</u> 		

5.2.9 Climate Change

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Operations	<p>Aspect: Operation of the malt plant.</p> <p>Impacts:</p> <ul style="list-style-type: none"> Contribution to the remaining South African Carbon budget. 	<p>Note: Since climate change is a global phenomenon, the assessment criterion is not fully applicable to an assessment of the impacts of GHG emissions on climate change. However, the criterion is currently the best tool for the climate change impact analysis.</p>	<ul style="list-style-type: none"> It is recommended lower fuel use or use alternative lower-carbon fuels be used for the Project. Other alternatives could be investigated, for example photovoltaic solar to meet some heat and electricity demands, reducing the quantities of gas combusted in the CHP units. 	<p>Duration: Long-term (-4) Scale: National (-4) Magnitude: Minor (-2) Probability: High (-4)</p> <p>Significance: Moderate (-40)</p>	Medium
Operations	<p>Aspect: Operational activities associated with the Project and local communities.</p> <p>Impacts: Climate change impact risks to the Project (increased temperatures, heat stress, and wildfires).</p>	<p>Note: Since climate change is a global phenomenon, the assessment criterion is not fully applicable to an assessment of the impacts of GHG emissions on climate change. However, the criterion is currently the best tool for the climate change impact analysis.</p>	<ul style="list-style-type: none"> Emergency plans should include the risk of responding to and managing of uncontrolled wildfires potentially crossing the Project fence line where cover vegetation could be ignited. From an adaption perspective, additional support infrastructure can reduce the climate change impact on the employees. For example, improving the thermal and electrical efficiency of buildings to reduce electricity consumption for air conditioning, ensuring adequate water supply for staff drinking water, amending summer operating hours to avoid the hottest part of the day and potential health and safety impacts for employees, having shaded green rest areas for employees during their shift breaks. 	<p>Duration: Permanent (-5) Scale: National (-4) Magnitude: Moderate (-6) Probability: Medium (-3)</p> <p>Significance: Moderate (-45)</p>	Medium

5.2.10 Dust and Emissions

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities (site clearing; excavations, drilling, operation of vehicles, equipment etc.)</p> <p>Impacts:</p> <ul style="list-style-type: none"> Dust and emissions during construction. 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Moderate (-6) Probability: High (-4)</p> <p>Significance: Moderate (-36)</p>	<ul style="list-style-type: none"> Dust must be suppressed on the construction site as well as access roads and active working areas during dry periods by the regular application of water. Water used for dust suppression must be used in quantities that will not result in the generation of runoff. A Dust Suppression Register must be kept on-site. The Contractor should monitor and maintain records of the frequency and the methods used to control fugitive dust emissions and maintain records of all fugitive dust complaints received and the corrective action taken in response to the complaint. 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Low (-4) Probability: Medium (-3)</p> <p>Significance: Low (-21)</p>	Low

5.2.11 Waste

Phase	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
<i>Construction</i>	<p>Aspect: Construction activities.</p> <p>Impact:</p> <ul style="list-style-type: none"> Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes general construction rubble, existing redundant infrastructure and hazardous waste (used oil, cement and concrete etc.). 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Low (-4) Probability: High (-4)</p> <p>Significance: Low (-28)</p>	<ul style="list-style-type: none"> Implement a comprehensive waste management plan, including recycling, reuse, and proper disposal of waste materials. Adequate rubbish bins and waste disposal facilities must be provided on site and at the construction camp. The construction site must be kept clean and tidy and free from rubbish. Recycling/re-use of waste must be encouraged. No solid waste must be burned on site. Bins must be provided to all areas that generate waste e.g. worker eating and resting areas and the camp site. General refuse and construction material refuse must not be mixed. Should rubble be required as a raw material for the construction, it must be taken to a designated stockpile area - which must be approved by the ECO. Spoil material must be hauled to a designated spoil site. No spoil material must be pushed down slope or discarded on site. 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-14)</p>	Low

5.3 IMPACTS THAT MAY RESULT FROM THE DECOMMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Discipline	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
Geohydrology	<p>Aspect: Poor quality seepage.</p> <p>Impact: Regional groundwater table/groundwater aquifer:</p> <ul style="list-style-type: none"> Any poor-quality seepage or runoff accumulation on the site, where it is allowed to percolate into the soils, could potentially impact the dolomitic aquifer water quality. 	<p>Duration: Medium-term (-3)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Moderate (-6)</p> <p>Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Park vehicles in dedicated areas. Have fuel and oil spill cleanup kits on site and clean up these areas immediately. Pollution prevention and house cleaning should be considered at all times. Visual soil assessments for signs of contamination on site. 	<p>Duration: Medium-term (-3)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Low (-4)</p> <p>Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Low
	<p>Aspect: Rehabilitation.</p> <p>Impact: Vadose zone soils and subsequent aquifer (groundwater table):</p> <ul style="list-style-type: none"> Rehabilitation of the plant and associated facilities. 	<p>Duration: Medium-term (3)</p> <p>Scale: Site (1)</p> <p>Magnitude: High (3)</p> <p>Probability: Definite (5)</p> <p>Significance: Moderate (+35)</p>	<ul style="list-style-type: none"> No mitigation required. 	No rating.	Low

Project related

Discipline	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
	<p>Aspect: Rehabilitation.</p> <p>Impact: Vadose zone soils and subsequent aquifer (groundwater table):</p> <ul style="list-style-type: none"> Poor quality seepage from machinery used to decommission and rehabilitate the plant area. 	<p>Duration: Medium-term (-3)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Moderate (-6)</p> <p>Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Park heavy machinery in lined areas and place drip trays under vehicles at the site. Visual soil assessments for signs of contamination during rehabilitation (monthly). 	<p>Duration: Medium-term (-3)</p> <p>Scale: Site (-1)</p> <p>Magnitude: Low (-4)</p> <p>Probability: Low (-2)</p> <p>Significance: Low (-16)</p>	Low
	<p>Aspect: Rehabilitation.</p> <p>Impact: Regional groundwater table/groundwater aquifer</p> <ul style="list-style-type: none"> Cession of dewatering activity and rebound of the groundwater table. 	<p>Duration: Medium-term (3)</p> <p>Scale: Site (1)</p> <p>Magnitude: High (3)</p> <p>Probability: Definite (5)</p> <p>Significance: Moderate (+35)</p>	<ul style="list-style-type: none"> No mitigation required. 	No rating.	Low
Hydrology	<p>Aspect: Rehabilitation</p> <p>Impact: Regional groundwater table/groundwater aquifer</p> <ul style="list-style-type: none"> Decommissioning of the borehole used for groundwater supply. 	<p>Duration: Medium-term (3)</p> <p>Scale: Site (1)</p> <p>Magnitude: High (3)</p> <p>Probability: Definite (5)</p> <p>Significance: Moderate (+35)</p>	<ul style="list-style-type: none"> No mitigation required. 	No rating.	Low
	<p>Aspect: Rehabilitation.</p> <p>Impact: Vadose zone soils and subsequent aquifer (groundwater table):</p> <ul style="list-style-type: none"> Rehabilitation of the plant and associated facilities. 	<p>Duration: Medium-term (+3)</p> <p>Scale: Site (+1)</p> <p>Magnitude: Moderate (+3)</p> <p>Probability: Definite (+5)</p> <p>Significance:</p>	<ul style="list-style-type: none"> No mitigation required. 	No rating.	Low

Project related

Discipline	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
	<p>Aspect: Rehabilitation.</p> <p>Impact: Vadose zone soils and subsequent aquifer (groundwater table):</p> <ul style="list-style-type: none"> Poor quality seepage from machinery used to decommission and rehabilitate the mine operations. 	<p>Moderate (+35)</p> <p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Moderate (-6) Probability: Definite (-5)</p> <p>Significance: Moderate (-50)</p>	<ul style="list-style-type: none"> Park heavy machinery in lined areas and place drip trays under vehicles at the site. Visual soil assessments for signs of contamination during rehabilitation (monthly). 	<p>Duration: Medium-term (-3) Scale: Site (-1) Magnitude: Low (-4) Probability: Improbable (-1)</p> <p>Significance: Low (-8)</p>	Low
<i>Dust and Emissions</i>	<p>Aspect: Construction activities (site clearing; excavations, drilling, operation of vehicles, equipment etc.)</p> <p>Impacts:</p> <ul style="list-style-type: none"> Dust and emissions during construction. 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Moderate (-6) Probability: High (-4)</p> <p>Significance: Moderate (-36)</p>	<ul style="list-style-type: none"> Dust must be suppressed on the construction site as well as access roads and active working areas during dry periods by the regular application of water. Water used for dust suppression must be used in quantities that will not result in the generation of runoff. A Dust Suppression Register must be kept on-site. The Contractor should monitor and maintain records of the frequency and the methods used to control fugitive dust emissions and maintain records of all fugitive dust complaints received 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Low (-4) Probability: Medium (-3)</p> <p>Significance: Low (-21)</p>	Low

Project related

Discipline	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			and the corrective action taken in response to the complaint.		
Waste	<p>Aspect: Construction activities.</p> <p>Impact:</p> <ul style="list-style-type: none"> Waste generation during the construction phase will have a negative impact on the environment, if not controlled adequately. Waste includes general construction rubble, existing redundant infrastructure and hazardous waste (used oil, cement and concrete etc.). 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Low (-4) Probability: High (-4)</p> <p>Significance: Low (-28)</p>	<ul style="list-style-type: none"> Implement a comprehensive waste management plan, including recycling, reuse, and proper disposal of waste materials. Adequate rubbish bins and waste disposal facilities must be provided on site and at the construction camp. The construction site must be kept clean and tidy and free from rubbish. Recycling/re-use of waste must be encouraged. No solid waste must be burned on site. Bins must be provided to all areas that generate waste e.g. worker eating and resting areas and the camp site. General refuse and construction material refuse must not be mixed. Should rubble be required as a raw material for the construction, it must be 	<p>Duration: Short-term (-2) Scale: Site (-1) Magnitude: Low (-4) Probability: Low (-2)</p> <p>Significance: Low (-14)</p>	Low

Project related

Discipline	Aspect and Impact	Without Mitigation	Mitigation	With Mitigation	Risk of the impact and mitigation not being implemented
			<p>taken to a designated stockpile area - which must be approved by the ECO.</p> <ul style="list-style-type: none"> ▪ Spoil material must be hauled to a designated spoil site. No spoil material must be pushed down slope or discarded on site. 		

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix G.

- Geohydrology Assessment.
- Hydrology Assessment.
- Noise Assessment.
- Traffic Assessment.
- Heritage Assessment.
- Paleontological Assessment.
- Socio-economic Assessment.
- Air Quality Impact Assessment.
- Climate Change Assessment.
- Aquatic Biodiversity Compliance Statement.

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

1. ESIA Study

- All information provided by the Engineering team, to the EAP was correct and valid at the time it was provided.
- Although all effort was made by the Project team to identify all environmental social and health aspects, impacts and mitigation measures, errors and omissions may have occurred.
- The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process.
- All data from unpublished research is valid and accurate.
- Every effort was made to engage I&APs and stakeholders, however not every I&AP and stakeholder may have been consulted. A grievance mechanism must be put in place at the commencement of construction through which I&APs and stakeholders are able to raise grievances and continue to contribute their concerns and issues with the Project team.

2. Air Quality Impact Assessment

- Measured meteorological data for the period January 2021 to December 2023 was used for the assessment. The data availability varied from year to year, with lower data availability in 2023. Due to the proximity of the measuring station to the proposed facility, the data was considered the most representative data available for the assessment.
- The quantification of sources of emission was restricted to the Project activities only. Although other background sources were identified, such as emissions from roads, domestic fuel burning, these could not be quantified and did not form part of the scope of work. Baseline air quality was discussed based on measured concentrations and cumulative effects considered in the impact significance rating.
- Emissions were based on the process description and facility layout plan as provided. Where specific information regarding exit points of emissions was not provided, the likely emission points were based on the three-dimensional layout provided.

- No site-specific particle size fraction data for the PM emission sources were available. Based on the literature reviewed, it was assumed that all PM emissions were PM₁₀ emissions and that PM_{2.5} emissions contribute less than 5% of the PM₁₀ emissions.
- It was assumed that PM₁₀ emissions occurred continuously and that the PM emissions from barley intake, cleaning and drying were continuous at the limit provided (10mg/m³ from the filter). This assumption is likely to overestimate the PM emissions from the facility.
- The SO₂ emissions from the CHP are very low due to the low sulphur content of the gas (15mg sulphur/Nm³) and was not modelled as the ambient impact can be considered negligible.
- During the time of the study, the operational hours of the boilers and the dryer were not available. Two scenarios were therefore modelled to obtain best and worst-case impacts. In the best-case scenario, only the CHP was operational. In the worst-case scenario the CHP, dryer and on boiler were all simultaneously and continuously operational.
- Ammonia will be utilised and stored on-site. Ammonia emissions will only be expected due to a loss of containment and not normal operation and these emissions were therefore not quantified as part of the assessment.
- Odour emissions were estimated using measurements conducted at a similar facility, which is likely to overestimate the emissions from the new malting plant. The odour emissions from an on-site WWTP were not quantified in this assessment.
- Gaseous emissions from vehicle exhaust from barley delivery and by-product transport were quantified, but not modelled since impacts from these sources occur mostly off-site.
- It was conservatively assumed that 100% of NO_x convert to NO₂.

3. Aquatic Biodiversity Compliance Statement

- It is assumed that all third-party information used (e.g., GIS data and satellite imagery) is correct at the time of generating this report; and
- The survey was restricted to a single site visit in May (late autumn), but due to the characteristics and condition of the study area, undertaking additional surveys for the purposes of this compliance statement is not considered necessary.

4. Paleontological Assessment

The geology of the area is the focal point of geological maps, and the sheet explanations of the Geological Maps were not intended to focus on palaeontological heritage. Many inaccessible areas of South Africa have never been examined by palaeontologists, and data is typically dependent solely on aerial pictures. Locality and geological information in museums and university databases is out of date, and data acquired in the past is not always adequately documented.

Comparable Assemblage Zones in other places are also used to provide information on the existence of fossils in areas that have not before been recorded. When similar Assemblage Zones and geological formations are used for desktop studies, it is commonly assumed that exposed fossil exists within the footprint. As a result, a field assessment will improve the accuracy of the desktop evaluation.

5. Heritage Impact Assessment

Not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area. Various factors account for this, including the subterranean nature of some archaeological sites and existing vegetation cover. It should be noted most of the study area was accessible for the fieldwork survey.

Fieldwork was also focused on area that was not previously ploughed or disturbed by farming activity, thus focusing on areas with the highest potential to yield heritage resources. Therefore, should any heritage features and/or objects be located or observed outside the identified heritage sensitive areas during the construction activities, a heritage specialist must be contacted immediately. Such observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question. This applies to graves and cemeteries as well. If any graves or burial places are located during the development, the procedures and requirements pertaining to graves and burials will apply.

6. Socio-economic Impact Assessment

- The proposed site fulfils the requirements for a suitable site based on technical information regarding local climatic conditions, solar radiation, topography, and land availability.
- The legislative and policy context plays a crucial role in assessing the socio-economic impacts of the Project.
- The planning and feasibility study of the Project was undertaken with integrity, and the information provided by the Project proponent was accurate and true at the time of preparing this report.
- This report is based on available information at the time of preparation, and there may be additional information that could strengthen arguments, contradict the information presented, or identify additional relevant data.
- The socio-economic data presented relies largely on Census information and additional data collected from communities near the proposed Project site. These data sources may have limitations due to the data collection process, including potential underrepresentation of certain groups or interests and a small sample size.
- The assessment is based on a snapshot in time and does not account for future changes in socio-economic trends, legislation, or technology that could affect the Project's socio-economic impacts.
- The assessment may not capture all potential indirect or cumulative socio-economic impacts, particularly those that result from complex socio-economic processes or interactions with other projects or activities in the area.
- The assessment relies on certain methods and tools to predict and evaluate socio-economic impacts. These methods and tools have inherent uncertainties and limitations, and different methods or tools may yield different results.

7. Noise Impact Assessment

- Ambient sound levels are the cumulative effects of innumerable sounds generated at various instances both far and near. A high measurement may not necessarily mean that the area is always noisy. Similarly, a low sound level measurement will not necessarily mean that the area is always quiet, as sound levels will vary over seasons, time of day.
- It is not the purpose of noise modelling to accurately determine a likely noise level at a certain receptor but to calculate a noise rating level that is used to identify potential issues of concern.
- It was assumed that any mitigation measures proposed for the construction phase will be implemented and continued during the operational phase.
- As it is unknown which processes and equipment will be operational (when and for how long), modelling considers a scenario where processes and equipment are under full load for a set time period. Modelling assumptions comply with the precautionary principle and operational time periods are frequently overestimated. The result is that projected noise rating levels would likely be overestimated.

8. Geohydrological Impact Assessment

- Simplifications and assumptions in the design of the model.
- Uncertainty in the boundary conditions and input parameters.
- Limited data is available to calibrate the model to the observed groundwater flow systems.
- Available water levels were averaged and assumed to have been constant for one (1) hydrological year. This is a best-case scenario applied, due to limited data.
- Transmissivity, storage, and porosity values for similar rock types in the area are assumed to be in the same order as available data.
- The numerical model is based on the conceptual model as developed for this investigation, as well as the generated field and desktop data as input.
- Available water levels were averaged and assumed to have been constant for one (1) hydrological year. This is a best-case scenario applied, due to limited data.
- Transmissivity, storage, and porosity values for similar rock types in the area are assumed to be in the same order as available data.
- The numerical model is based on the conceptual model as developed for this investigation, as well as the generated field and desktop data as input.

9. Hydrology Impact Assessment

- The ALOS DTM is used to delineate the stormwater drainage areas and is assumed to be of sufficient resolution to accurately describe the runoff from the site(s).
- A detailed engineering and bulk services layout for the proposed plant was not made available for this assessment.
- Conceptual stormwater modelling and sizing were undertaken, as well as the application of the RM (3) methods to determine 1-2 and 1-100-year stormwater peak flows.

- No dynamic engineering level stormwater modelling or stormwater sizing was undertaken (not part of this scope). It is assumed that the concepts presented in this report will be modelled and developed by a professional civil engineer and integrated into the mine master layout plan.

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Refer to Section 5.2 above.

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

Not Applicable.

5.4 CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

5.4.1 Geohydrology

In terms of the preparation and operational phase, there are expected cumulative impacts on the soils associated with the site. The impact is predicted to improve at the closure phase and if rehabilitation is rolled out. No cumulative impact is anticipated on the dolomite compartment from which water will be drawn, due to the low volumes proposed. The impact on the reserve associated with the groundwater sub-catchment scale was determined by the evaluation of the scale of abstraction and the stress on water quantity.

5.4.2 Hydrology

Based on the unique hydrology conditions of the site and proposed stormwater management options, no impacts to the hydrological cycle are anticipated. Runoff will still be allowed to enter the watercourses as well as stormwater to maintain ecological water requirements, and the impact of increased evaporation is considered marginal on a sub-catchment scale.

5.4.3 Noise

Construction and operational activities and road noise from the R59 could cumulatively increase noise levels in the area. This impact will disappear after the decommissioning activities.

5.4.4 Palaeontology

The cumulative impact of the development is considered to be medium pre-mitigation and low post-mitigation and falls within the acceptable limits for the Project. It is therefore considered that the

proposed development will not lead to damaging impacts on the palaeontological resources of the area. The construction of the development may thus be permitted in its whole extent, as the development footprint is not considered sensitive in terms of palaeontological resources.

5.4.5 Socio-economic

- Increase in employment opportunities and skills development – cumulative impact is rated as positive moderate significance with the following mitigation:
 - The establishment of the Project is expected to increase employment opportunities, enhance skills development, and create business opportunities in the region. This will include roles in operation, maintenance, and ancillary services.
- Influx of jobseekers and change in population – cumulative impact is rated negative moderate significance with mitigation as highlighted for the construction and operation impacts.

In summary the cumulative impacts of the Project, especially the installation of several facilities in the local municipality, offer socio-economic prospects for the area, resulting in positive socio-economic benefits. The cumulative effects include job creation, skill development, and downstream business opportunities. If a critical mass is achieved, local enterprises can develop capabilities to support construction and maintenance activities and manufacture malting facility components in South Africa. The cumulative impact at the municipal level can be positive, encouraging operations and maintenance (O&M) companies to focus on education and training initiatives.

5.4.6 Air Quality

- Increase in hourly ambient NO₂ concentrations – Low.
- Increase in annual ambient NO₂ concentrations – Low.
- Increase in daily ambient PM concentrations – Moderate.
- Increase in annual ambient PM concentrations – Low.
- Odour impacts at nearby receptors – Low.
- Nuisance dust impacts at nearby receptors – Low.

Estimated cumulative impact of the existing baseline pollutant concentrations and the incremental increase due to the malt plant.

Table 21: Estimated Cumulative Impacts

Pollutant	NAAQS	Kliprivier AQMS Maximum Measured ^(a)	Simulated incremental ^(b) (at site boundary)	Cumulative (at site boundary) ^(c)	Simulated incremental ^(d) (at Kliprivier AQMS)	Cumulative (at Kliprivier AQMS) ^(e)
Short term averaging period						
NO ₂	200	57	153	210^(f)	2	59
PM ₁₀	75	140	15	155^(f)	2	142
PM _{2.5} ^(g)	25 ^(h)	90	0.8	90.8^(f)	0.1	90.1
Annual average						

NO ₂	40	10	9.5	19.5	0.2	10.2
PM ₁₀	40	58	3.6	62	0.1	58
PM _{2.5} ^(g)	15 ^(h)	32	0.18	32	0.006	32

Notes:

- (a) Maximum value from the three years summarised in Table 5-4
- (b) From dispersion modelling reported in Section 5.1.5 at the site boundary
- (c) Kliprivier AQMS maximum measured (a) plus simulated incremental at site boundary (b)
- (d) From dispersion modelling reported in Section 5.1.5 at the Kliprivier AQMS
- (e) Kliprivier AQMS maximum measured (a) plus simulated incremental at the Kliprivier AQMS (d)
- (f) A likely overestimation of impact at the plant boundary due to wind direction and distance from the monitoring station
- (g) All PM_{2.5} due to the malt plant is assumed to be 5% of the PM₁₀ (as discussed in Section 5.1.5.2)
- (h) NAAQS for PM_{2.5} that will be applicable from 1 January 2030

The following is recommended:

Ambient Monitoring

- It is recommended that an annual short-term (14-day) monitoring using passive diffusive sampling techniques for NO₂, VOCs, and PM₁₀ should be undertaken at three locations on the site boundary to ensure that compliance with NAAQS is maintained at the site boundary.
- It is recommended that an odour complaints register be kept, and all complaints received noted, investigated and corrective action taken, where appropriate. Any corrective action taken should be noted in the register. It is recommended that, if an on-site WWTP is commissioned, it be designed using best practice principles to reduce the impact of odours on surrounding communities.
- It is recommended that the facility monitor and maintain records of the frequency and the methods used to control fugitive dust emissions and maintain records of all fugitive dust complaints received and the corrective action taken in response to the complaint.
- It is further recommended that facility-wide inspections of all sources of fugitive emission sources be conducted and if any of the sources of dust or odours are not being reasonably controlled, corrective action be taken.
- To ensure that the facility does not have a significant ambient impact over and above the baseline impact, fence-line ambient monitoring and source monitoring is proposed using passive diffusion.
- It is recommended that a comprehensive air quality management plan (AQMP) be developed.
- The AQMP should include provisions for regular reviews of mitigation measures.

Source Monitoring

It is recommended that maintenance of the baghouses be performed if visible emissions exceed 0% opacity. In addition, the pressure drop across the baghouses is required to be maintained within manufacturer and the operation and maintenance manual specifications. It is recommended that performance tests on the baghouse(s) to ensure that the emission limit of 10 mg/m³ is not exceeded. PM_{2.5} as well as PM₁₀ should be measured to provide more accurate data for future assessments. It is recommended that as minimum the following emission sources be monitored periodically for PM emissions:

- All baghouse sources; and
- Kilns.

It is further recommended that performance testing be conducted to ensure that the following equipment achieve the performance standard set by the manufacturer for NOx emissions:

- CHP units; and
- Boilers.

5.5 ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Proposal

The objective of this proposed Project is to build a malt plant and associated infrastructure near the Heineken Sedibeng Brewery. The Project is envisaged as an import substitution and enhancement of barley production in the agricultural sector in South Africa. The beer sector in South Africa contributes to roughly 1 in every 66 jobs in the country, with the supply chain comprising farmers, packaging manufacturers, brewers, distributors, and retailers. As unemployment has seen to be increasing this Project aims to alleviate this by providing opportunities for the surrounding communities through direct employment opportunities during the construction phase for skilled and unskilled labourers (~265 people) as well as indirect opportunities for suppliers of machinery and equipment for the plant.

The major input material for the Project will be barley which will be acquired from the local market. The Project is planned to consume about 125,000 tons of raw barley per year for Phase 1 for the local market. Hence, implementation of the Project will enhance the development of a local value chain.

Based on the social and biophysical impact identification process and proposed mitigation measures, the Project, in the EAPs opinion, does not pose a detrimental impact on the receiving environment. There are no fatal flaws prohibiting the Project from going ahead. This Environmental Impact Statement is based on the findings summarised in the section below.

5.5.1 Geohydrology

Based on the findings of the Geohydrology Assessment, the proposed activities pose a low risk to the geohydrological environment. It is proposed that a formal groundwater monitoring plan be considered to monitor any potential impacts on the downstream environment and to maintain a record of the environmental impact that will take place.

5.5.2 Hydrology

Based on the findings of the Hydrology Assessment, the proposed activities pose a low risk to the hydrological environment. Mitigation options to offset negative impacts included in the ESMP should

be implemented during the operational and closure phases of the Project. A Stormwater Management Plan must be implemented for the development.

Whilst no formal surface water monitoring is proposed, monthly visual assessments in work areas associated with the preparation, operational and closure phase activities should be undertaken. If visual and monitoring observations show areas of concern (i.e., where pollution is observed during the operational phase) then it is advised mitigation measures to be formulated based on the scale of impact observed. Stormwater monitoring would also require a visual component where the stormwater system is visually assessed every month to identify issues (i.e., clogged systems, erosion and sedimentation) and then rectify the issues observed.

5.5.3 Noise

Using conceptual worst-case noise models, it was determined that the potential noise impacts at the Project would be:

- Low significance for day-time construction activities;
- Low significance for night-time construction activities (even though night-time construction are not anticipated);
- Low significance for day-time operational activities; and
- Low significance for night-time operational activities.

It is expected that the plant could be audible at the closest NSR (NSR01) during the night-time, though it is not regarded as a noise impact. While complaints about noise might be possible (though considered unlikely), the implementation of the general mitigation measures could assist in reducing annoyance with the Project.

Bi-annual noise monitoring is recommended at NSR01 for the first year of operation (summer and during winter). Noise monitoring should consider the requirements of SANS 10103:2008.

5.5.4 Traffic

With the implementation of mitigation measures as included in the ESMP, traffic impacts (deterioration of the road network, increase in traffic volumes, deterioration of road safety conditions) can be managed for the duration of the Project.

5.5.5 Heritage and Palaeontology

No heritage and palaeontological resources were located, however, not detracting in any way from the comprehensiveness of the fieldwork undertaken, it is necessary to realise that the heritage resources located during the fieldwork do not necessarily represent all the possible heritage resources present within the area and Chance Find Procedure/Protocol should be implemented in the event that any heritage or palaeontological resources are unearthed during construction.

5.5.6 Socio-economic

The proposed Project is well-positioned to contribute to the sustainable development of the SDM. The Project's focus on employment creation, economic stimulation, sustainable practices, and community engagement ensures that it will provide long-term benefits to both the local community and the broader economy.

The SEIA has identified potential challenges and provided robust mitigation strategies to address them, ensuring that the Project aligns with South Africa's broader developmental goals. With the implementation of the recommended measures, there are no socio-economic objections to the development proceeding, and no fatal flaws have been identified.

5.5.7 Air Quality

The main findings from the air quality impact assessment are:

- Ambient air quality data from the Kliprivier AQMS shows compliance with short-term SO₂, NO₂ and CO standards, although short-term peak concentrations can occur. Daily PM₁₀ and PM_{2.5} concentrations as well as 8-hour rolling average O₃ concentrations were in non-compliance with the NAAQS.
- Emissions quantification and dispersion modelling show that the New Malting Plant does not result in a substantive concentrations of criteria air pollutants (SO₂, NO₂, CO, VOCs, PM₁₀, and PM_{2.5}).
- Increased odour impacts are possible at receptors located towards the south and south-west of the facility, but the quantum of the impacts is likely to be overestimated by this assessment.

It is the opinion of the specialist that the Project, with effective mitigation measures implemented and corrective action taken when necessary, has a low impact on ambient air quality beyond the property boundary. Regular maintenance of control equipment and continued monitoring of sources (including all baghouses and kilns) is recommended along with periodic ambient monitoring.

5.5.8 Climate Change

Based on the information available at the conceptual phase of design, Scope 1 emissions for the Project construction would be 2 645 t CO₂e (mostly due to fuel use of 473 t CO₂e per annum). In the operational phase, Scope 1 emissions over the Project lifetime amount to 950 102t CO₂e (19 002t CO₂e per annum) due to gas combustion in the combined heat and power genset (CHP). This was calculated to represent a maximum 0.0054% of the remaining South African annual GHG budget. The site clearance and replacement with permanent infrastructure would potentially result in a reduction in the National grassland carbon sink by 0.002%. The proposed Project is rated to have a low impact significance since Scope 1 GHG emissions during the operational phase will not exceed the 25 Gg CO₂-e per year threshold.

5.5.9 Aquatic Biodiversity Compliance Statement

No impacts to the freshwater environment or freshwater features in the area surrounding the study area are envisioned and the risk profile to the freshwater environment is considered low to negligible. Should the Project, as proposed, remain within the demarcated footprint (study area) as provided by the proponent, the maltings plant and construction and operation thereof will not result in an impact (new or cumulative) on any freshwater features in the vicinity of the study area. The proposed maltings plant in its current form is associated with a low risk to the freshwater environment.

5.6 IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

Construction Phase Impact Summary			
Discipline	Impact	Without Mitigation	With Mitigation
Geotechnical	Formation of sinkholes	Moderate (-)	Moderate (-)
Geohydrology	Earthworks and construction activities	Moderate (-)	Low (-)
	Storage of wastewater	Moderate (-)	Low (-)
Hydrology	Disturbance to vadose zone	Moderate (-)	Low (-)
	Earthworks and construction activities	Moderate (-)	Low (-)
Noise	Construction activities: day-time	Low (-)	Low (-)
	Construction activities: night-time	Low (-)	Low (-)
Traffic	Deterioration of road network condition	Moderate (-)	Moderate (-)
	Increase in traffic volumes	Moderate (-)	Moderate (-)
	Deterioration of road safety conditions	Moderate (-)	Moderate (-)
Palaeontology	Impact on palaeontological resources	Moderate (-)	Low (-)
Heritage	Damage/destruction to archaeological heritage resources	Low (-)	Low (-)
Socio-economic	Direct and indirect employment opportunities and skills development	Low (+)	Moderate (+)

Project related

	Economic multiplier effects.	Low (+)	Moderate (+)
	Influx of jobseekers and change in population	Moderate (-)	Low (-)
	Safety and security	Moderate (-)	Low (-)
	Nuisance impacts, including noise and dust	Moderate (-)	Low (-)
Dust and emissions	Dust and emissions generated during construction	Moderate (-)	Low (-)
Waste	Waste generation during construction	Low (-)	Low (-)

Operational Phase Impact Summary:

Discipline	Impact	Without Mitigation	With Mitigation
Geohydrology	Over-abstraction of groundwater from the boreholes	Moderate (-)	Low (-)
	Poor-quality seepage or runoff accumulation on the site	Moderate (-)	Low (-)
Hydrology	Contamination due to poor quality runoff	Moderate (-)	Low (-)
Noise	Operational activities: day-time	Low (-)	Low (-)
	Operational activities: night-time	Low (-)	Low (-)
Socio-economic	Direct and indirect employment opportunities and skills development	Moderate (+)	Moderate (+)
	Economic multiplier effects	Moderate (+)	Moderate (+)
	Occupational Health and Safety impacts	Moderate (-)	Moderate (-)
Air Quality*	Increase in hourly and annual ambient NO ₂ concentrations	See note below	Low (-)
	Increase in hourly and annual ambient PM concentrations	See note below	Low (-)
	Odour impacts at nearby receptors	See note below	Low (-)

	Nuisance dust impacts at nearby receptors	See note below	Low (-)
Climate Change**	Contribution to the remaining South African Carbon budget	See note below	Moderate (-)
	Climate change impact risks to the Project (increased temperatures, heat stress, and wildfires)	See note below	Moderate (-)

Note:

* Mitigation included in design

** Since climate change is a global phenomenon, the assessment criterion is not fully applicable to an assessment of the impacts of GHG emissions on climate change. However, the criterion is currently the best tool for the climate change impact analysis.

Decommissioning/Closure Phase Impact Summary:

Discipline	Impact	Without Mitigation	With Mitigation
Geohydrology	Rebound of groundwater table and decommission of boreholes used for groundwater supply	Moderate (+)	No further mitigation proposed
	Poor quality seepage from decommissioning activities	Moderate (-)	Low (-)
Hydrology	Poor quality seepage from decommissioning activities	Moderate (-)	Low (-)
Waste	Waste generation during decommissioning	Low (-)	Low (-)

For alternative:

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

As mentioned above in the Alternative Section, the preferred option is the proposal which entails development of a new greenfield malt plant utilising combined heat and power genset (including back up system) with 8MW of heating energy, 4MW of cooling energy and 3MW of electrical power through the CHP Plant, heat pumps and heat exchangers. The CHP will produce electricity that will be used by the heat pumps. Complementary heat will be coming from cooling of the CHP. This cycle, so called trigeneration, is the state of the art in term of energy optimization.

The siting of the Project along R59 within the Graceview Industrial Park and next to the Kliprivier Business Park, ensures that industrial activities are consolidated within this focus area and does not pose a conflict with the district and local municipality planning initiatives.

5.7 SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

5.7.1 Gauteng Provincial Spatial Development Framework (2030)

The Gauteng Spatial Development Framework (GSDF) 2030 was officially adopted in 2016 to replace the previous GSDF 2011 in response to the lack of transformation in the space, economic and social areas as well as to comply with the Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013). (GPSDF 2030, 2016). The GSDF 2030 vision is to create a ‘balanced, polycentric spatial network, with strong and resilient nodes enabling mutually beneficial exchanges of goods and services, and movement of people”.

In terms of the Gauteng Provincial Spatial Development Framework, 2030, The MLM falls within the Focus Area 3: Economic Consolidation which states that *“They are ideal sites for integrating functions in an unequal, unjust and fractured spatial economy. This area can serve as an economic connector between the economic heartland and the periphery of the Apartheid City, bringing the erstwhile margins into the economic heart of the province. The provincial government needs to support the development of nodes and linkages in the desired network with the necessary transport infrastructure, suitable housing, land identification, land-banking as well as safety and security. Municipalities must ensure that the private sector is intimately involved in the economic consolidation of these areas, providing a broad mix of compatible land-uses, high-density residential developments and creating opportunities for a broader mix of people of various income and social groups.”*

The Project is located along the R59 within the Graceview Industrial Park and next to the Kliprivier Business Park, taking the above into consideration, the proposed Project will ensure that industrial activities are consolidated within this Focus Area and does not pose a conflict with the district and local municipality planning initiatives.

5.7.2 Gauteng Province Environmental Management Framework (GPEMF) and Exclusion of Associated Activities from the Requirement to obtain an Environmental Authorisation (No. 164, 02 March 2018)

The GPEMF is a legal instrument in terms of the Environmental Management Framework Regulations, 2010. The purpose of the regulations is to assist environmental impact management including EIA processes, spatial planning and sustainable development.

The objective of the GPEMF is to guide sustainable land use management within the Gauteng Province. These are the following aims of the GPEMF (GDARD, 2014):

- To provide a strategic and overall framework for environmental management in Gauteng;
- Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng;
- Determine geographical areas where certain activities can be excluded from an EIA process; and
- Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making.

The Project is located with Zone 5 which means the geographical area depicted as the in the GPEMF in which non-polluting industrial and large-scale commercial developments are facilitated through the use of excluded activities of which a geographical representation can be found in Appendix 3 of the Standard. The following activities applicable to the Project are excluded according to the Appendix 3 of the Standard. The excluded activities in Appendix 1 of the Standard applicable to Project include: Listing Notice 1: Activity 13, 14, 25, 27, 28, 58 and Listing Notice 2: Activity 4 and will require registration to comply with the Standard.

5.7.3 Sedibeng District Municipality Spatial Development Framework (2019)

The Sedibeng SDF addresses spatial, environmental and economic issues confronting both the urban and rural areas within the District and responds to the policy and legislative parameters established by National and Provincial Government and take cognisance of the municipal space economy in the context of the provincial and national space economies.

Due to the most prominent feature of the SDM being the Vaal River, the spatial vision is aimed at “*Building Towards a Developmental Metropolitan River City of Choice*”.

That spatial vision is centred on the following key elements:

- Conservation of the major environmental assets of the district including the ridges and the Vaal River system.
- Structured development around the four development corridors in the district: N1, R59, N3 and N17.
- Spatially targeted investment by all spheres of government in and around a number of nodes along the development corridors and in selected rural areas.
- Comprehensive supporting movement network to connect the district nodes and corridors.
- Consolidation of the urban fabric around identified nodes, and as a secondary objective, the establishment of a core urban conurbation in the southern parts of the N1 and R59 development corridors up to the Vaal River.
- Business and industrial development primarily focused along the four development corridors.
- Tourism development centred around the ridges, the Suikerbosrand Nature Reserve and at specific precincts along the Vaal River.
- Limited, well managed mining activity dictated by location of relevant mineral resources.

Based on the above, 12 development principles which collectively provides the spatial logic/development rationale towards the future development of the Sedibeng District, this Project directly aligns with principles 1, 2, 3, 5, 6 and 7 described below:

1. Effective environmental and land use management to achieve a sustainable equilibrium between ecosystem and biodiversity conservation, and urban related development within the District;
2. Enhanced spatial efficiency through a defined range of urban and rural nodes in the district around which to consolidate economic development and infrastructure investment (spatial targeting);
3. Enhancement of four Strategic Development Corridors supplemented by an extensive local transport network providing linkages between urban and rural nodes;
4. Consolidate community facilities at urban and rural nodal points to enhance “one-stop” access to such facilities for the community, and to contribute towards creating “critical mass” required to stimulate local economic development;
5. Enhance business activities (formal and informal) at each of the identified nodal points in the Sedibeng District and incorporate informal/ emerging business activities into Thusong Centres and modal transfer facilities; and
6. Concentrate industrial and agro-processing activities at the higher order nodes or along the major development corridors in the District where infrastructure is available;

The Project is located in the R59 Development corridor within an area that is currently in use for industrial activities and where future development in the area is more suited to commercial and industrial uses, thereby consolidating similar land uses as well as making use of the established road networks and stimulating the economic growth in the area.

5.8 RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).	YES	
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If “NO”, indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

If “YES”, please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

The Project, in the EAP’s opinion, does not pose detrimental impacts on the receiving environment and the moderate impacts identified can be mitigated significantly using the mitigation measures proposed. Therefore, the EAP recommends the proposed Project proceed as planned. The Applicant should be bound to stringent conditions to maintain compliance and a responsible execution of the Project. In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through practical measures, the recommendations from this report study are also included within an Environmental and Social Management Plan (ESMP) also referred to as the Environmental and Management Programme (EMPr).

The ESMP must be used to ensure compliance with environmental specifications and management measures. The implementation of the ESMP for the life-cycle of the Project is considered to be vital in achieving the appropriate environmental management standards as detailed for this Project. In addition, the following key conditions should be included as part of the authorisation:

- The Developer is not negated from complying with any other statutory requirements that is applicable to the undertaking of the activity.
- The Developer must appoint a suitably experienced (independent) Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation/rehabilitation measures and recommendations are implemented and to ensure compliance with the provisions of the ESMP.

5.9 THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT

(as per notice 792 of 2012, or the updated version of this guideline)

(i) Is the activity permitted in terms of the property's existing land use rights?	YES		Please explain
The proposed malt plant will be established at the Graceview Industrial Park in Sedibeng which is located in the southern part of Gauteng. The site has been zoned as "Industrial 1" as well as Zone 5 (Industrial and Commercial Focus) in the GPEMF. The Graceview Industrial Park is strategically located next to the Heineken Sedibeng Brewery, availability of land for industrial development and located in close proximity to a national highway network (R59).			
(ii) Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES		Please explain
In terms of the Gauteng Provincial Spatial Development Framework, 2030, The MLM falls within the Focus Area 3: Economic Consolidation which states that " <i>They are ideal sites for integrating functions in an unequal, unjust and fractured spatial economy. This area can serve as an economic connector between the economic heartland and the periphery of the Apartheid City, bringing the erstwhile margins into the economic heart of the province. The provincial government needs to support the development of nodes and linkages in the desired network with the necessary transport infrastructure, suitable housing, land identification, land-banking as well as safety and security. Municipalities must ensure that the private sector is intimately involved in the economic consolidation of these areas, providing a broad mix of compatible land-uses, high-density residential developments and creating opportunities for a broader mix of people of various income and social groups.</i> "			
The Project is located along the R59 within the Graceview Industrial Park and next to the Kliprivier Business Park, taking the above into consideration, the proposed Project will ensure that industrial activities are consolidated within this Focus Area and does not pose a conflict with the district and local municipality planning initiatives.			
(b) Urban edge / Edge of Built environment for the area	YES		Please explain
The Project is located inside of the urban edge.			

<p>(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).</p>		NO	Please explain
<p>In terms of the MLM IDP, the R59 is a major transport corridor and is earmarked as a development corridor linking the City Deep logistics hub and OR Tambo International Airport in the north to the Vereeniging-Vanderbijlpark complex in the south. The Southern Corridor is seen as a means to reindustrialise the South:</p> <p>“R59 Development Corridor has since 2000 been the premier industrial corridor of the municipality. The corridor is anchored in the north by the Klipriver Business Park, and Graceview and by the Meydustralia Industrial Park in the south. The corridor has seen significant growth on the eastern side of the corridor over the past two decades. The western side of the corridor has excellent prospects for development due to the saturation levels experienced on the eastern side. The future growth of the municipality is dependent on its ability to attract new investment in the industrial and commercial sector as this will create sustainable employment opportunities in the entire value chain. “</p> <p>Therefore, this Project is in line with the vision for the MLM and will assist the MLM in diversifying the regional economy.</p>			
<p>(d) Approved Structure Plan of the Municipality</p>		NO	Please explain
<p>The project fits within the spatial development plan for the MLM and will assist in ensuring the vision of the MLM will be attained by providing investment opportunities as well as creating sustainable employment within the region.</p>			
<p>(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)</p>		NO	Please explain
<p>According to the the GPEMF, the Project is located within <i>Zone 5: Industrial and Commercial Focus Zone</i> in which non-polluting industrial and large-scale commercial developments in which projects such as the malt plant is preferred to be located.</p>			
<p>(f) Any other Plans (e.g. Guide Plan)</p>		NO	Please explain
<p>Not Applicable.</p>			

<p>(iii) Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</p>	<p>YES</p>	<p>Please explain</p>
<p>The Project is located along the R59 and next to the Kliprivier Business Park, according to the SDM IDP 2023-2024, the district represents the “<i>Southern Corridor of the Gauteng City Region with the primary focus directed at diversifying the economy (Tourism, Agriculture, Logistics and Manufacturing), creating new sustainable urban and rural nodes and promoting the local economy. Manufacturing, Finance and Government Services are the strongest sectors (GVA) while Trade contributes highest to job opportunities.</i>” The IDP also indicates that the R59 is seen as a development corridor due to the presence of large industrial areas that drive the economy in the district with the aim to further strengthen this area. The Sedibeng District Spatial Development Framework (2019) further validates this as Principle 7 is to “<i>Concentrate industrial and agro-processing activities at the higher order nodes or along the major development corridors in the District where infrastructure is available</i>”</p> <p>In terms of the MLM Integrated Development Plan, the R59 is a major transport corridor and is earmarked as a development corridor linking the City Deep logistics hub and OR Tambo International Airport in the north to the Vereeniging-Vanderbijlpark complex in the south. The Southern Corridor is seen as a means to reindustrialise the south:</p> <p><i>“R59 Development Corridor has since 2000 been the premier industrial corridor of the municipality. The corridor is anchored in the north by the Klipriver Business Park, and Graceview and by the Meydustrria Industrial Park in the south. The corridor has seen significant growth on the eastern side of the corridor over the past two decades. The western side of the corridor has excellent prospects for development due to the saturation levels experienced on the eastern side.</i></p> <p><i>The future growth of the municipality is dependent on its ability to attract new investment in the industrial and commercial sector as this will create sustainable employment opportunities in the entire value chain.”</i></p> <p>Taking the above into consideration, the land use associated with the proposed Project will ensure that industrial activities are consolidated within this Focus Area and does not pose a conflict with the district and local municipality planning initiatives.</p>		

<p>(iv) Does the community / area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>	<p>YES</p>	<p>Please explain</p>
<p>The Project is envisaged as an import substitution and enhancement of barley production in the agricultural sector in South Africa. The beer sector in South Africa contributes to roughly 1 in every 66 jobs in the country, with the supply chain comprising farmers, packaging manufacturers, brewers, distributors, and retailers. As unemployment has seen to be increasing, this Project aims to alleviate this by providing opportunities for the surrounding communities through direct employment opportunities during the construction phase for skilled and unskilled labourers (~265 people) as well as indirect opportunities for farmers, suppliers of machinery and equipment for the plant.</p> <p>The major input material for the Project will be barley which will be acquired from the local market. The Project is planned to consume about 125,000 tons of raw barley per year for Phase 1 for the local market. Hence, implementation of the Project will enhance the development of a local value chain.</p>		

(v) Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?	YES		Please explain
<p>The bulk services such as water, sewer and stormwater are in place due to the establishment of the Kliprivier Business Park and Heineken Sedibeng Brewery.</p> <p>The Graceview Industrial Park is not yet completely developed and there is currently limited stormwater infrastructure at the site, the stormwater interventions for the site include using temporary berms, sandbags, revegetation of eroded areas, silt fences and temporary drainage trenches to convey stormwater around active work areas and to the downstream environment. Permanent structures include infiltration trenches, raised road section to promote runoff to the surroundings and formalisation of the existing roads. These interventions where practical will form part of the detailed design for the Project.</p> <p>Rand Water via the MLM will be the main supplier of potable water to the plant and the domestic sewerage and effluent from the plant will be disposed of via an existing sewer pipeline to the Midvaal Pump Station before, reaching the ERWAT WWTW. All the necessary service level agreements will be in place prior to Project implementation.</p> <p>In addition, two boreholes will be used to supplement potable water and an on-site Wastewater Treatment Plant will be developed to treat effluent prior to release to ERWAT (preferred) or to discharge into the Klip River. A Water Use Licence application will be submitted to the Department of Water and Sanitation for the above water uses,</p> <p>From a traffic engineering perspective, it is expected that the Project will generate an additional 50 vehicles per hour in both weekdays morning and afternoon peak periods on the surrounding road network. The analysis indicates that all the intersections are currently operating at acceptable levels of service. The addition of the development traffic will have a negligible impact on the intersections in the study area. There is no need to upgrade an intersection within the study area.</p>			
(vi) Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?	YES		Please explain
<p>The Project is located in an area already zoned for industrial use as indicated above and is in line with the integrated development plan for both SDM and MLM as well as the SDF for SDM. Bulk services are already in place in this area and an indication from the MLM is that the existing services are capable of handling the additional requirements associated with the new malt plant.</p>			

(vii) Is this project part of a national programme to address an issue of national concern or importance?	YES		Please explain
<p>The proposed Project does not directly form part of any national programmes but does aim to contribute to achieving the strategies set out in the National Development Plan 2030 such as “creating an environment for sustainable employment and economic growth.” During the construction phase potential employment opportunities will be created for both skilled and unskilled labourers with the opportunity for some jobs to be carried over into the operational phase. Soufflet Malt South Africa is committed to ensuring that their practices lead to the upliftment of the local community that they operate in. A key component of the Project is the supply of barley which will be sourced through local farmers and this will provide an important opportunity to sustain the farming community which is also an important market for the SDM.</p>			
(viii) Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES		Please explain
<p>The Project is located in an area already zoned for industrial use as indicated above and is in line with the integrated development plan for both SDM and MLM as well as the SDF for SDM. Bulk services are already in place in this area and an indication from the MLM is that the existing services are capable of handling the additional requirements associated with the new malt plant.</p>			
(ix) Is the development the best practicable environmental option for this land/site?	YES		Please explain
<p>The Basic Assessment study is being conducted in terms of the EIA Regulations 2014 (as amended) as well as the IFC Performance Standards and Good International Industry Practice and as such defines the procedure and criteria relating to environmental authorisations for the commencement of activities in order to avoid detrimental impacts on the environment or, where it cannot be avoided, to mitigate and effectively manage these impacts and optimise positive environmental impacts.</p> <p>The Project is located in an area already zoned for industrial use as indicated above and is in line with the integrated development plan for both SDM and MLM as well as the SDF for SDM. Bulk services are already in place in this area and an indication from the MLM is that the existing services are capable of handling the additional requirements associated with the new malt plant.</p>			
(x) Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES		Please explain
<p>The Project is located in an area already zoned for industrial use and is also within Zone 5 of the GPEMF. The land use is suited to the Project site. Whilst, the Project may have potentially negative impacts, these impacts will be carefully managed through mitigation measures as contained in the Environmental and Social Management Plan (ESMP).</p>			
(xi) Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES		Please explain
<p>There will be other industries being developed in the Graceview Industrial Park (as the business park is not fully developed).</p>			

(xii) Will any person's rights be negatively affected by the proposed activity/ies?		NO	Please explain
The stakeholder engagement process will allow I&AP's an opportunity to raise any concerns with the proposed Project.			
(xiii) Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?		NO	Please explain
The Project is within the urban edge and will not compromise the urban edge.			
(xiv) Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?		NO	Please explain
Strategic Integrated Projects (SIPS) relate to social and economic infrastructure across all nine provinces and include catalytic projects that can fast-track development and growth. This Project has not been registered as a Strategic Infrastructure Project.			
(xv) What will the benefits be to society in general and to the local communities?	Please explain		
<p>Economic Growth: The Project is expected to significantly stimulate both local and regional economic growth. During construction, the influx of workers and increased demand for materials and services will inject capital into the local economy. Operationally, the Project will generate sustained economic activity through the production and distribution of malt, thereby supporting local businesses and contributing to the GDP of the SDM.</p> <p>Employment Opportunities: During the construction phase, approximately 265 jobs will be created, prioritising local labour to enhance community benefits. Once operational, the Project is expected to employ around 180 permanent staff, ranging from unskilled to highly skilled positions, thus providing long-term employment and promoting skills development within the local community.</p>			
(xvi) Any other need and desirability considerations related to the proposed activity?	Please explain		
<p>Sustainability and Efficiency: The plant will incorporate advanced technologies to ensure efficient use of resources. Key sustainable practices include the use of CHP systems to optimise energy consumption, water recycling systems to minimise water usage, and potential future integration of solar PV systems to enhance renewable energy use. These measures align with South Africa's sustainability goals and contribute to reducing the Project's environmental footprint.</p> <p>Minimal Environmental Impact: The strategic location of the plant within the Graceview Industrial Park, an area already zoned for industrial use, minimises environmental disruption. A ESMP has been compiled that provides the actions for the management of identified environmental impacts emanating from the Project and a detailed outline of the implementation programme to minimise and /or eliminate the anticipated negative environmental impacts.</p>			

(xvii) How does the project fit into the National Development Plan for 2030?	Please explain
	<p>The proposed Project does not directly form part of any national programmes but does aim to contribute to achieving the strategies set out in the National Development Plan 2030 such as “creating an environment for sustainable employment and economic growth” during the construction phase a large quantity of employment opportunities will be created for both skilled and unskilled labourers with the opportunity for some jobs to be carried over into the operational phase.</p> <p>Soufflet Malt South Africa is committed to ensuring that their practices lead to the upliftment of the local community that they operate in. A key component of this is the supply of barley which will be sourced from local farmers and this will provide an important opportunity to sustain the farming community which is also an important market for the SDM.</p> <p>This Project provides an opportunity to meet these goals.</p>
<p>(xviii) Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.</p>	
	<p>The impacts associated with the proposed Project will be identified, predicted and evaluated to minimise negative impacts, maximise benefits and promote compliance with the principles of environmental management set out in Section 2 of NEMA. Mitigation and management measures to minimize negative impacts and maximize benefits from the proposed Project have been included in the ESMP attached as Appendix H to this Report.</p>
<p>(xix) Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.</p>	
	<p>The proposed Project will be sustainable in terms of the following:</p> <ul style="list-style-type: none"> ▪ Social: The local community and society in general will potentially also benefit from the Project in terms of direct and indirect job creation. ▪ Economic: The Project will strengthen one of the key economic sectors within the Region which is manufacturing as well as stimulate growth in the agricultural sector due to the provision of the raw materials (barley) needed for the malting process. ▪ Environmentally: the proposed Project will avoid as far as practically possible any environmentally and socially sensitive areas, where this is not possible, mitigation measures have been proposed to minimise the impact. ▪ A ESMP (Appendix H) has been compiled that provides the actions for the management of identified environmental impacts emanating from the Project and a detailed outline of the implementation programme to minimise and /or eliminate the anticipated negative environmental impacts.

5.10 THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

(CONSIDER WHEN THE ACITIVTY IS EXPECTED TO BE CONCLUDED)

The lifespan of the Project will be approximately 50 years. This includes the time required for undertaking the construction, operation, maintenance and decommissioning. The actual construction work is planned to commence in 2025 and it will take about 24 months to complete.

Based on the findings of the impacts assessment, it is recommended that the Project be granted an Environmental Authorisation valid for a period of 10 years.

5.11 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

(must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers “Yes” to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached	Yes
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6 SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other information

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.