



McCain Foods (Pty) Ltd

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

MCCAIN DELMAS PROPOSED WASTEWATER TREATMENT PLANT AND EXPANSION OF DIESEL STORAGE





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STORAGE

PUBLIC

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APPENDIX A

EAP CV

LIST OF ACRONYMS

Acronym	Description
AEL	Atmospheric Emission Licence
AIP	Alien Invasive Plant
AIR	Atmospheric Impact Report
AQO	Air Quality Officer
AQMS	Air Quality Monitoring Station
BA	Basic Assessment
BAR	Basic Assessment Report
BPEM	Best Practicable Environmental Option
CA	Competent Authority
CAA	Civil Aviation Authority
CARA	The Conservation of Agricultural Resources Act (No. 43 of 1983)
CBA	Critical Biodiversity Areas
COD	Chemical Oxygen Demand
CRR	Comments and Responses Report
CV	Curriculum Vitae
DDM	District Development Model
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
DAF	Dissolved Air Flotation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act, 1989 (Act 73 of 1989)
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
ESAs	Ecological Support Areas
GA	General Authorisation
HPA	Highveld Priority Area
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
ISO	International Organization for Standardisation
LED	Local Economic Development
LSA	Local Study Area
MBCP	Mpumalanga Biodiversity Conservation Plan

Acronym	Description
MBR	Membrane Bioreactor
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
MEGDP	Mpumalanga Economic Growth and Development Path
MHI	Major Hazard Installation
MLR	Mixed Liquor Recycle
NAAQS	National Ambient Air Quality Standards
NDP	National Development Plan of 2030
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998) (as amended)
NEMAQA	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) (as amended)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (as amended)
NEMWA	National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (as amended)
NHRA	National Heritage Resource Act, 1999 (Act 25 of 1999)
NWA	National Water Act, 1998 (Act 36 of 1998)
OHSA	Occupational Health and Safety Act, 1993 (Act 85 of 1993) (as amended)
ONAs	Other Natural Areas
PAOI	Project Areas of Influence
PGDS	Provincial Growth and Development Strategy
PPP	Public Participation Process
PSDF	Provincial Spatial Development Framework
RAS	Return Activated Sludge
RO	Reverse Osmosis
RWQ	Receiving Water Quality
S&EIR	Scoping and Environmental Impact Reporting
SACCA	South African Civil Aviation Authority
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SCC	Species of Conservation Concern
SDF	Spatial Development Framework
SSRV	Site Sensitivity Verification Report
TIA	Traffic Impact Assessment
TVOCs	Total Volatile Organic Compounds
UASB	Upflow Anaerobic Sludge Blanket
UF	Ultrafiltration
VEB	Vegetative Environmental Buffer
VKLM	Victor Khanye Local Municipality
WAS	Waste Activated Sludge



Acronym	Description
WHO	World Health Organisation
WML	Waste Management Licence
WRF	Weather Research and Forecasting
WWTP	Wastewater Treatment Plant



UNITS OF MEASUREMENT

Unit	Description
Ha	Hectare
km	Kilometre
m	Metre
m ²	Square metre
m ³	Cubic metre
TPH	Tonne Per Hour

1 INTRODUCTION

WSP Group Africa (Pty) Ltd (WSP) has been appointed by McCain Foods (Pty) Ltd (McCain) to undertake a Basic Assessment (BA) process in accordance with the Environmental Impact Assessment (EIA) Regulations, 2014 (as amended) (GNR 326) (EIA Regulations) published under the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) (as amended), for the development of a proposed Wastewater Treatment Plant (WWTP) and the installation of an additional diesel storage tank at the McCain Delmas Plant, located within Victor Khanye Local Municipality, in the Mpumalanga Province, South Africa.

The BA is required in support of an application for Environmental Authorisation (EA) to the Mpumalanga Department: Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA), the competent authority (CA) for the project. This document constitutes the environmental management programme (EMPr) that has been compiled in support of the BA.

1.1 PROJECT OVERVIEW

McCain Foods South Africa (SA) operates as a subsidiary of the global McCain Foods Group. The Delmas Plant primarily focuses on processing potatoes and sweet potatoes into frozen French fries (chips) for distribution in the retail market. The plant currently operates two french fry lines, each with a capacity of 7.5 tonnes per hour (TPH), resulting in a total finished product output of 15 TPH. It is understood that, in the future, the plant will operate the two lines at 8 TPH, with a total finished product output at 16 TPH. To accommodate the proposed changes and increased production capacity, a wastewater treatment plant (WWTP) designed to support the 8 TPH lines is required. Additional diesel storage capacity is required to operate the relatively new generator facility installed to be used back-up power for the plant as and when needed.

1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP was appointed in the role of Environmental Assessment Practitioner (EAP) to undertake the BA process for the proposed project. The CV of the EAP is available in Appendix A. Table 1-1 outlines the relevant contact details for the EAP.

Table 1-1 – Details of the EAP

EAP	WSP Group Africa (Pty) Ltd
Contact Person:	Olivia Allen
Physical Address:	Building 1, Maxwell Office Park, Magwa Crescent West, Waterfall City Midrand
Telephone:	+27 11 254 4875
Email:	Olivia.Allen@wsp.com

EAP	WSP Group Africa (Pty) Ltd
EAP Qualifications:	<ul style="list-style-type: none"> ■ B.Sc. Zoology and GEMgraphy ■ B.Sc. (Hons.) GEMgraphy and Environmental Management, University of Free State, South Africa ■ M.Sc. (Water Resource Management), University of Pretoria, South Africa
EAPASA Registration Number:	EAPASA (2020/1725)

1.3 PURPOSE OF THE EMPR

An EMPr is defined as “an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the projects are enhanced.”

This EMPr has been compiled in accordance with Appendix 4 of the EIA Regulations, in compliance with Section 24N of NEMA, with the purpose of ensuring that negative impacts are reduced, and positive effects are enhanced through a process of continual improvement, during the construction, operational and decommissioning phases of the project.

To facilitate compliance to the EMPr by appointed contractors and sub-contractors, it is required that all on-site personnel are aware of the requirements of the EMPr as well as the prescribed penalties should a non-conformance be identified during the construction, operation and decommissioning activities.

Further to the above, appointed contractors and sub-contractors will also be required to comply with all relevant legislation and standards.

A hard copy of the EMPr must always be available on site and made available to officials on request.

1.3.1 EMPR OBJECTIVES

The EMPr has the following objectives:

- Identify mitigation measures and environmental specifications which are required to be implemented for the construction, operation and decommissioning phases of the project in order to manage and minimise the extent of potential environmental impacts associated with the facility;
- Ensure that all the phases of the project do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced;
- Identify entities responsible for the implementation of the measures and outline functions and responsibilities;
- Create management structures that address the concerns and complaints of interested and affected parties (I&APs) with regard to the proposed project;
- Propose mechanisms and frequency for monitoring compliance, and preventing long-term or permanent environmental degradation;
- Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
- Train on-site personnel with regard to their environmental obligations; and

- Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that were not considered in the BA process.

1.3.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

To facilitate compliance with the EMPr, the project proponent must comply with all relevant legislation and standards and make all personnel aware of the requirements of the EMPr, as well as the prescribed penalties should a non-conformance be identified during the different phases of the proposed project.

It is recommended that environmental objectives (as outlined in this document) be emphasised as minimum requirements. Objectives include:

- Encourage good management practices through planning and commitment to environmental issues, and provide rational and practical environmental guidelines to:
 - Minimise disturbance of the natural environment;
 - Minimise fugitive emissions;
 - Minimise the impact of added traffic in the area;
 - Ensure surface water and groundwater resource protection;
 - Prevent or minimise all forms of pollution;
 - Protect indigenous flora and fauna;
 - Prevent soil erosion;
 - Promote sustainable use of resources;
 - Adopt the best practical means available to prevent or minimise adverse environmental impacts;
 - Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
 - Promote the reduction, reuse, recycling and recovery of waste; and
 - Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste.
- Describe all monitoring procedures required to identify impacts on the environment;
- Define how the management of the environment is reported and performance evaluated; and
- Train on-site personnel on their environmental obligations.

1.4 STRUCTURE OF THE EMPR

For the purposes of demonstrating legal compliance, Table 1-2 cross-references the sections within the EMPr with the requirements as per Appendix 4 of the EIA Regulations.

Table 1-2 – Legislative Requirements for an EMPr as detailed in Appendix 4 of the EIA Regulations

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
(a)	details of-	
	(i) the EAP who prepared the EMPr; and	Section 1.2
	(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Appendix A

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
(b)	a detailed description of the aspects of the activity that are covered by the EMP as identified by the project description;	Section 2
(c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers;	Section 3
(d)	A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-	Sections 3.2 and 6
	(i) planning and design;	
	(ii) pre-construction activities;	
	(iii) construction activities;	
	(iv) rehabilitation of the environment after construction and where applicable post closure; and	
	(v) where relevant, operation activities;	
(f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to -	Section 6
	(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	
	(ii) comply with any prescribed environmental management standards or practices;	
	(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and	
	(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable	
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 5
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 5
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 5 / Section 6
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 6

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 5
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations	Section 5 / Section 6
(m)	an environmental awareness plan describing the manner in which- (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 5.2
(n)	any specific information that may be required by the competent authority	N/A

2 PROJECT DESCRIPTION

This section provides a description of the project site location and a summary of the project details. The descriptions encompass the activities to be done during the construction, operational and decommissioning (should it be decided that the facility will be decommissioned) phases.

2.1 LOCATION OF THE PROPOSED PROJECT

The proposed WWTP and diesel tank will be located within the existing operational area of the McCain Delmas Plant, located on Portion 5 of Farm Leeuwpoort 205 IR. The McCain Plant site is accessible via the R42, with a turn into Harrison Road. The proposed WWTP will be located in the northeastern corner of the site, while the new diesel tank will be situated in the southwestern corner of the site, adjacent to an existing diesel tank. Refer to Figure 2-1 for the localities of the proposed developments and Table 2-1 for the cadastral information of the site.

Table 2-1 – Cadastral Information of the Site

Information Requirements	Details
21 Digit Surveyor General Code of each Cadastral Land Parcel	T0IR00000000020500005
Physical Address and Farm Name	Portion 5 of Farm Leeuwpoort 205 IR
Land Use Zoning	Unknown
Municipality	Victor Khanye Local Municipality, Nkangala District Municipality

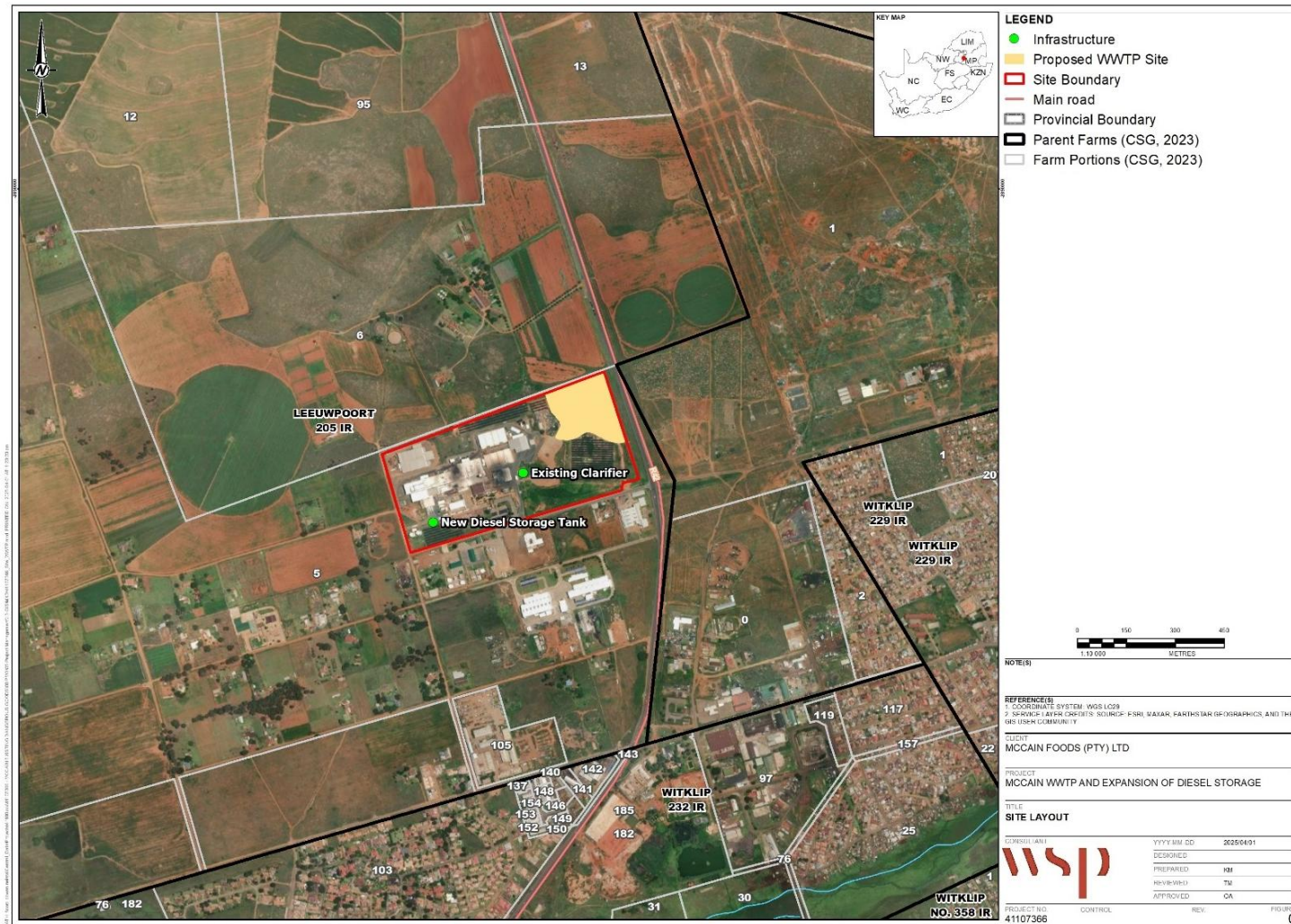


Figure 2-1 – Locality map of the Proposed WWTP and associated infrastructure

2.2 PROJECT COMPONENTS

2.2.1 EXISTING OPERATIONS

McCain Delmas produces frozen chips for the retail market. The facility was established in the year 2000. In general, the operation entails fresh vegetables (potatoes and sweet potatoes) being delivered to site via road transport. These vegetables are kept in ammonia refrigeration cold storage until it is needed for processing. The vegetables are washed, peeled and cut according to specification, after which it is partially cooked in sunflower and palm oil fryers and frozen in freezer tunnels. Once frozen it is packed and placed in cold storage until dispatched. Finished goods are transported to retailers on demand, on a first in, first out basis.

A production flow diagram of the chip making process is illustrated in Figure 2-2 below.

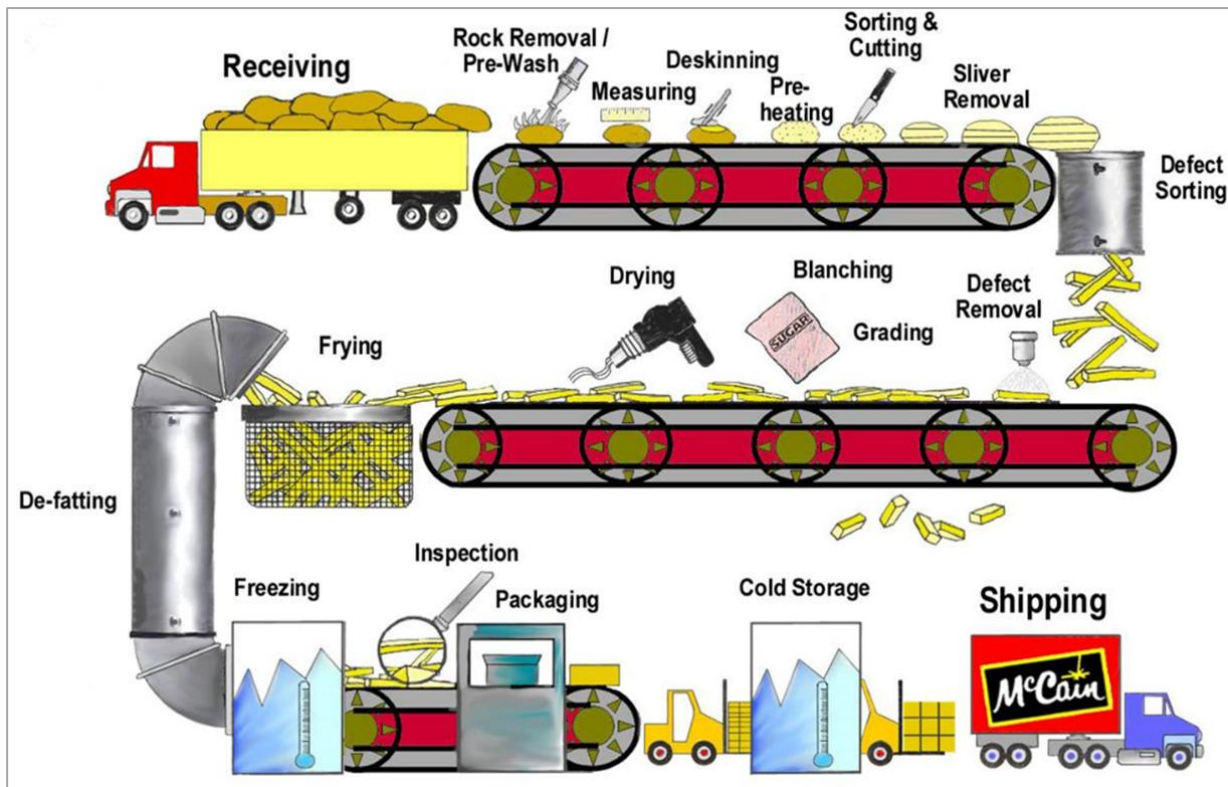


Figure 2-2 - Production flow diagram

2.2.1.1 Ammonia System

All cooling and refrigeration needs are met by five dedicated ammonia-based refrigeration units. The five ammonia systems are replenished every three to four months using a 30-tonne road tanker, which connects through non-return valves at the respective ammonia facilities. During routine purging of the main system, any released ammonia gas is channelled into a water tank, where it is neutralized through dissolution (iSHEcon, 2021).

2.2.1.2 Diesel Tanks

McCain cumulatively stores approximately 44 m³ of diesel in various tanks on site. Diesel is used for forklifts, back-up generators and a diesel fire water pump¹.

2.2.1.3 Oil Tanks and Boilers

Sunflower and palmoline oils are maintained at a temperature of 60 to 65 °C in three pencil tanks, each with a capacity of 100 m³. Additionally, two tanks, one holding 75 m³ and the other 100 m³, are used to store oily wastewater from the production process, also kept at the same temperature range. Four day-use tanks hold the oil designated for fryer operations, with their contents similarly heated to 60 to 65 °C (iSHEcon, 2021). Steam for heating is generated by four coal-fired boilers, and a dedicated coal storage area is located near the boilers.

2.2.1.4 Effluent Management

Wastewater generated at the plant is currently sent to a rotary screening reel and a primary clarifier. Effluent clarified by the primary unit is released into the sewer system. Additionally, an oily water system is in place, consisting of an oily water screen, a separation tank, a dissolved air flotation (DAF) unit, and a dedicated oil storage tank. This system is designed to handle oily wastewater generated in the fryer sections of the facility. Caustic cleaning from the fryers is planned to bypass this oily water treatment process.

A permit (Ref. No 12/2/2/14, dated 17 June 2022) in terms of the Victor Khanye Local Municipal By-laws for discharge of treated wastewater effluent to municipal sewer is in place for the site. The Victor Khanye Local Municipality has set specific discharge compliance targets for the facility. McCain has indicated interest in retaining the flexibility to either release treated effluent directly to the environment or implement additional treatment processes to enable water recycling within the facility.

2.2.1.5 Raw Materials Used

Table 2-2 lists the raw materials used at McCain. In addition, Table 2-3 presents the energy sources.

Table 2-2 – Raw materials

Raw Material Type	Actual Consumption Rate (Quantity)		Units (Quantity per Period)
	Current	Proposed	
Potatoes	175,000	200,000	Tonnes/annum
Sunflower oil, Palmoline oil and Canol oil	6,000	6,000	Tonnes/annum

¹ A diesel fire water pump is a fire protection device powered by a diesel engine, designed to deliver high-pressure water to firefighting systems when electrical power is unavailable or unreliable.

Table 2-3 – Energy sources

Energy source	Actual Consumption Rate (Quantity)		Units (Quantity per Period)
	Current	Proposed	
Electricity	28,000,000	28,000,000	kWh/annum
Solar power	6,000,000	6,000,000	kWh/annum
Coal	18,500	18,500	Tonnes/annum
Diesel	100	100	Tonnes/annum
Liquid Petroleum Gas	4	4	Tonnes/annum

2.2.2 PROPOSED OPERATIONS

2.2.2.1 Proposed Wastewater Treatment Plant

The proposed WWTP is required to treat effluent that is generated from the manufacturing process. The plant will have a maximum daily treatment volume flowrate of 3 400 m³/day and will be located in the northwestern corner of the site, on McCain-owned property. The effluent will be treated to meet the quality requirements that would be suitable for direct discharge to the environment, or for plant use (potable water quality). Waste activated sludge (WAS) from the treatment plant will be temporarily stored in hoppers on site and ultimately disposed off-site.

The plant will include an anaerobic digestion process that will cater for chemical oxygen demand (COD) containing wastes on-site, such as fryer waste, slivers, and other materials that are collected in the main wastewater screen and oily water screen. The anaerobic digester will convert the COD into biogas, which can be used to either generate power or displace coal in the processing plant's boilers. The digester feed flow will be approximately 385 m³/day, with a total digestion volume of 9 074 m³.

The development area for the facility will be approximately 9 000 m² and will include the following key infrastructure components:

- Existing Clarifier
- Equalisation Tank
- Upflow anaerobic sludge blanket (UASB) Reactor Feed tank and Pumps
- UASB sludge tank
- Activated Sludge
- Wastewater Process Building
- MBR Tank
- Biogas Digester
- Biogas and Power Building
- Flare

2.2.2.2 Proposed Diesel Tank

McCain cumulatively stores approximately 44 m³ of diesel in various tanks on site. McCain proposes to install an additional 79 m³ diesel storage tank where the current 30 m³ diesel tank is located. There is limited space to accommodate both tanks at this location; therefore, the existing 30 m³ tank will be moved next to generator 4, replacing the current generator 4 storage tank.

2.3 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

2.3.1 CONSTRUCTION PHASE

The construction process will follow industry-standard methods and techniques. Key activities associated with the construction phase are described below.

2.3.1.1 Site Establishment and Transportation of Materials and Equipment to Site

McCain Delmas is an existing facility which is operational. The selected contractor will establish a temporary site camp including, but not be limited to,

- Temporary offices;
- Laydown areas for equipment and materials;
- Above ground fuel storage (e.g. gasoil/ petrol) for fuelling of plant and equipment – it is unlikely that volumes would be stored in quantities exceeding 9000L which is considered sufficient for normal construction site requirements.
- Temporary waste storage areas; these shall be established and managed in accordance with EMPr requirements.

Materials and equipment will be transported to the site via public roads within the McCain Delmas area. It is anticipated that materials will be collected daily from the contractor's laydown area for construction activities, minimizing storage impacts at the laydown area.

2.3.1.2 Sourcing of Construction Materials and Equipment

Bulk materials (aggregate, cement, steel etc.) will be sourced from existing lawful commercial sources; there will be no direct mining, harvesting or extraction of natural resources. Where feasible, equipment will be sourced locally; however, procurement outside Delmas may occur where commercially viable.

2.3.1.3 Site Clearance

Vegetation within the project area comprises of short, dense grassland typical of Highveld ecosystems. The WWTP footprint is largely covered by alien invasive plants (AIPs), with minimal indigenous vegetation. The central and eastern portions of the site contain construction rubble from the original McCain Delmas development and were cleared of vegetation in 2016. Therefore, limited vegetation clearing will be required. Vegetation clearing will also be limited to the WWTP and associated infrastructure footprints. No clearing for access roads is required, as existing roads will be utilised.

2.3.1.4 Excavations and Earthworks

Earthworks will be undertaken based on founding specifications for the new WWTP and the diesel storage facility. Activities will include:

- Levelling and compaction using heavy machinery / earthmoving equipment;
- Excavations and trenching for foundations and below-ground infrastructure (cables, pipes, drainage systems etc.); and
- Piling / drilling depending on the identified construction / founding technique.

2.3.1.5 Conceptual Storm Water Management Plan

A conceptual storm water management plan has been developed for the proposed WWTP (WSP, 2025e) (attached as Appendix D.1). The objective of the plan is to direct storm water to prevent

flooding for given design criteria and to separate clean and dirty runoff. Clean runoff must reach the municipal storm water network in a controlled manner and dirty storm water must be collected and managed based on water quality.

Storms beyond the design specification must be allowed to leave the WWTP footprint and be discharged to a scour/erosion apron and leave the premises to the municipal storm water system, where the capacity requires confirmation base on additional impervious catchment. Care must be taken in the selection of materials of construction in ensuring that the materials will be durable against the expected water quality. The system will not be maintenance free, and design must ensure that the system can be flushed by specialist companies and audits must be undertaken to monitor system integrity and seasonal storm water quality.

2.3.1.6 Labour Requirements and Employment

The construction phase will generate direct employment opportunities. Labour categories will include skilled, semi-skilled, and unskilled workers. Local employment will be prioritised, following a proximity-based approach, with preference given to residents within the local area.

2.3.1.7 Demobilisation

Upon completion of the construction phase for the WWTP and the diesel storage facility, any temporary infrastructure will be removed, and the affected areas rehabilitated.

2.3.2 OPERATIONAL PHASE

The operational phase will involve continuous functioning of the WWTP and the diesel storage facility to ensure sustainable business operations. Diesel will be periodically loaded into the storage tank to maintain uninterrupted supply for facilities' requirements. McCain will be responsible for managing the operations of the WWTP and the diesel storage. The WWTP and the diesel storage is designed to last for the Project lifespan, with the facility operating 24 hours per day, 7 days per week.

Operation and maintenance will involve a variety of tasks, including the following:

- Management and oversight;
- Provision of manpower;
- Provision of electricity and chemicals, fuels lubricants, consumables, and spare parts;
- Day-to-day operation of the plant and the diesel tank;
- Adjustment of process whenever necessary;
- Routine maintenance;
- Repair and replacement work;
- Performance monitoring; and
- Preparation and execution of training.

3 ENVIRONMENTAL SENSITIVITY

3.1 SITE SENSITIVITY

Table 3-1 below illustrate the overall sensitivity of the site in relation to the project infrastructure.

Table 3-1 – Environmental Sensitivities identified by the DFFE Screening Tool and Verified by the EAP and Specialists

Discipline	Infrastructure Type and Specialist Sensitivity Criteria	
	DFFE Screening Tool	Specialist/EAP Verification
Agricultural Theme	<ul style="list-style-type: none"> According to the DFFE Screening Tool, the Agricultural Theme sensitivity is rated as <u>Very High</u> due to Delmas-Ogies Protected Agricultural Area. 	<p>Following the site verification by the soil specialist on 20 March 2025, the area was classified as generally not suited for cultivation, with a <u>Medium to Low sensitivity</u>, due to:</p> <ul style="list-style-type: none"> More than half of the study area is currently covered with fill material and thus cannot be used for dryland cropping. The remaining portion of the study area is approximately 1.5 ha. Inherently, the Hutton soils found in the study area have a high land capability (Class I). But given that this is a relatively small portion of land, commercial dryland cropping on this portion would not be economically feasible.
Animal Species Theme	<ul style="list-style-type: none"> According to the DFFE Screening Tool, the site is considered <u>Medium sensitivity</u> for the Animal Species Theme, due to the potential presence of fauna species of conservation concern (SCC), namely <i>Eupodotis Senegalensis</i>, <i>Chrysospalax villosus</i>, <i>Crocidura maquassiensis</i>, <i>Dasymys robertsii</i>, and <i>Clonia uvarovi</i>. 	<ul style="list-style-type: none"> Site verification, as per the site visit undertaken by the specialist on 25 June 2025, refuted this classification and assigned a <u>Low sensitivity</u> to the Animal Species Theme. The McCain Delmas property is walled off from the surrounding landscape for security reasons, thereby limiting potential utilisation of the site by many faunal species. Vegetation is present in the form of a disturbed, wooded grassland patch that was noted to support nesting avifauna. However, none of the species recorded on site are of conservation concern and it is highly unlikely that SCCs would occur in the study area given the lack of suitable habitat, and matrix of anthropogenic activities and impacts present.
Aquatic Biodiversity Theme	<ul style="list-style-type: none"> According to the DFFE Screening Tool, the site is considered to have a <u>Low sensitivity</u>. 	<ul style="list-style-type: none"> The EAP confirmed that the site is not located near any watercourses. However, a detailed storm water management plan was compiled for the project.
Archaeological and Cultural Heritage Theme	<ul style="list-style-type: none"> The DFFE Screening Tool rendered the proposed site to be <u>Low sensitivity</u> in relation to the Archaeological and Cultural Theme. 	<ul style="list-style-type: none"> The <u>Low sensitivity</u> for the sites was confirmed by the heritage specialist. No Stone Age, Iron Age or Historical Age sites, features or material were identified in the proposed development areas during the May 2025 field-based assessment.

Discipline	Infrastructure Type and Specialist Sensitivity Criteria	
	DFFE Screening Tool	Specialist/EAP Verification
Civil Aviation Theme	<ul style="list-style-type: none"> As per the DFFE Screening Tool, the Civil Aviation Theme is classified as <u>Low sensitivity</u>. 	<ul style="list-style-type: none"> Following the site verification by the EAP, it was confirmed that the proposed developments are unlikely to impact civil aviation as the nearest Delmas Airfield – FADE, is a single-strip airfield suitable for small aircraft operations and it is not classified as a high-traffic or commercial aviation hub. Furthermore, the proposed diesel tank and structures associated with the WWTP, including tanks, digesters, and buildings, are of low to moderate height and do not exceed the 45-metre threshold that typically triggers aviation safety assessments under the Civil Aviation Authority (CAA) guidelines. Also, none of the infrastructure will pose glint or glare risks to aviation. The Civil Aviation theme is therefore verified to be of <u>Low sensitivity</u>.
Defence Sensitivity Theme	<ul style="list-style-type: none"> The DFFE Screening Tool rendered the proposed site as <u>Low Sensitivity</u> in relation to the Defence Theme. 	<ul style="list-style-type: none"> Following the site verification by the EAP, it was concluded that the proposed project is not likely to have any impact on any surrounding sites, and therefore it is confirmed that this theme is of <u>Low Sensitivity</u>.
Palaeontology Theme Sensitivity	<ul style="list-style-type: none"> The DFFE Screening Tool rendered the site as <u>Very High Sensitivity</u> in relation to the Palaeontology Theme due to the presence of features with high palaeontological sensitivity. 	<ul style="list-style-type: none"> The palaeontologist undertook a site visit on 17 March 2025 and confirmed that there were no fossils in the project footprint and therefore refute the Very High sensitivity and assigned a <u>Low sensitivity</u> to the Palaeontology Theme.
Plant Species Theme	<ul style="list-style-type: none"> The sensitivity of the site based on the Terrestrial Plant Species theme is rated <u>Medium</u> as per the DFFE Screening Tool. No plant species of conservation concern (SCC) is expected to occur in the project area. 	<ul style="list-style-type: none"> The site verification as undertaken on 25 June 2025 by the specialist corroborated this classification and confirmed a <u>Low sensitivity</u> for the Plant Species Theme.
Terrestrial Biodiversity Theme	<p>The DFFE's Screening Tool considers the project areas as having Very High Terrestrial Biodiversity sensitivity based on the presence of the endangered vegetation type, Eastern Highveld Grassland</p>	<p>As per the site visit undertaken by the specialist on 25 June 2025, due to the dominant presence of modified habitats and the confirmed absence of vegetation representative of Vulnerable Eastern Highveld Grassland vegetation type, the Very High sensitivity classification is refuted and a Low sensitivity for the Terrestrial Biodiversity Theme is assigned.</p>

3.2 IMPACT ASSESSMENT OUTCOMES

With the implementation of suitable mitigation measures, identified negative impacts can be reduced to Low – Very Low, and with enhancement measures, some of the positive impacts can be increased to Moderate.

It is important to highlight that the proposed diesel storage tank will be situated within an existing, disturbed operational zone and is intended to integrate seamlessly with the current activities at the McCain Delmas Plant site. Similarly, the proposed WWTP is to be established in an area that has already been subject to significant disturbance, with the majority of its footprint comprising fill material, predominantly soil and rock derived from earlier construction phases at the McCain Delmas Plant site.

A comprehensive summary of the identified environmental impacts, along with their respective significance ratings for the proposed diesel storage facility, the WWTP, and associated infrastructure, is presented in Table 3-2.

Table 3-2 – Impact Assessment Summary

Aspect	Impact Description	Phase	Without Mitigation		With Mitigation	
			Significance	Status	Significance	Status
Air Quality	Operational phase impacts of air pollution on sensitive receptors	Operational	Low	(-)	Very Low	(-)
Noise	Noise impact on surrounding sensitive receptors	Construction	Low	(-)	Very Low	(-)
		Operational	Low	(-)	Low	(-)
Soil, land use and land capability impact assessment	Impacts on land capability, soil quality and health	Construction	Moderate	(-)	Low	(-)
	Impacts on land use (soil availability), soil quality	Construction	Moderate	(-)	Low	(-)
	Soil contamination	Operational	Moderate	(-)	Low	(-)
	Soil contamination	Decommissioning	Moderate	(-)	Low	(-)
Groundwater	Groundwater quantity	Construction & Operational	Very Low	(-)	Very Low	(-)
	Groundwater quality	Construction & Operational	Very Low	(-)	Very Low	(-)

Aspect	Impact Description	Phase	Without Mitigation		With Mitigation	
			Significance	Status	Significance	Status
Terrestrial biodiversity	Loss of modified habitat for commonly occurring fauna and flora	Construction	Low	(-)	Low	(-)
	Faunal Mortality	Construction	Low	(-)	Low	(-)
	Spread of Alien Invasive Plant species	Construction	Low	(-)	Low	(-)
	Continued Spread of Alien Invasive Plant species	Operational	Low	(-)	Low	(-)
	Further disturbance of modified habitat for commonly occurring fauna and flora	Operational	Low	(-)	Low	(-)
	Spread of Alien Invasive Plant species	Decommissioning	Low	(-)	Low	(-)
Social	Job creation	Construction	Low	(+)	Moderate	(+)
	Population Influx	Construction	Moderate	(-)	Low	(-)
	Procurement from local businesses	Construction	Low	(+)	Moderate	(+)
	Community livelihood	Construction	Low	(-)	Very Low	(-)
	Intrusive impacts	Construction	Low	(-)	Very Low	(-)
	Community, health and safety	Construction	Low	(-)	Very Low	(-)
	Job creation	Operational	Low	(+)	Low	(+)

Aspect	Impact Description	Phase	Without Mitigation		With Mitigation	
			Significance	Status	Significance	Status
	Community livelihood	Operational	Low	(-)	Low	(-)
	Intrusive impacts	Operational	Moderate	(-)	Low	(-)
	Intrusive impacts	Decommissioning	Low	(-)	Very Low	(-)
PalaEMntology	Damage to palaEMntology	Construction	Low	(-)	Very Low	(-)
Heritage	Damage to heritage resources	Construction	Very Low	(-)	Very Low	(-)

3.3 ENVIRONMENTAL SENSITIVITY MAP / FINAL SITE LAYOUT

A final environmental sensitivity map indicating the proposed development footprints in relation to sensitive environmental features is included as Figure 3-1. No buffers or exclusion zones were recommended by the specialists.

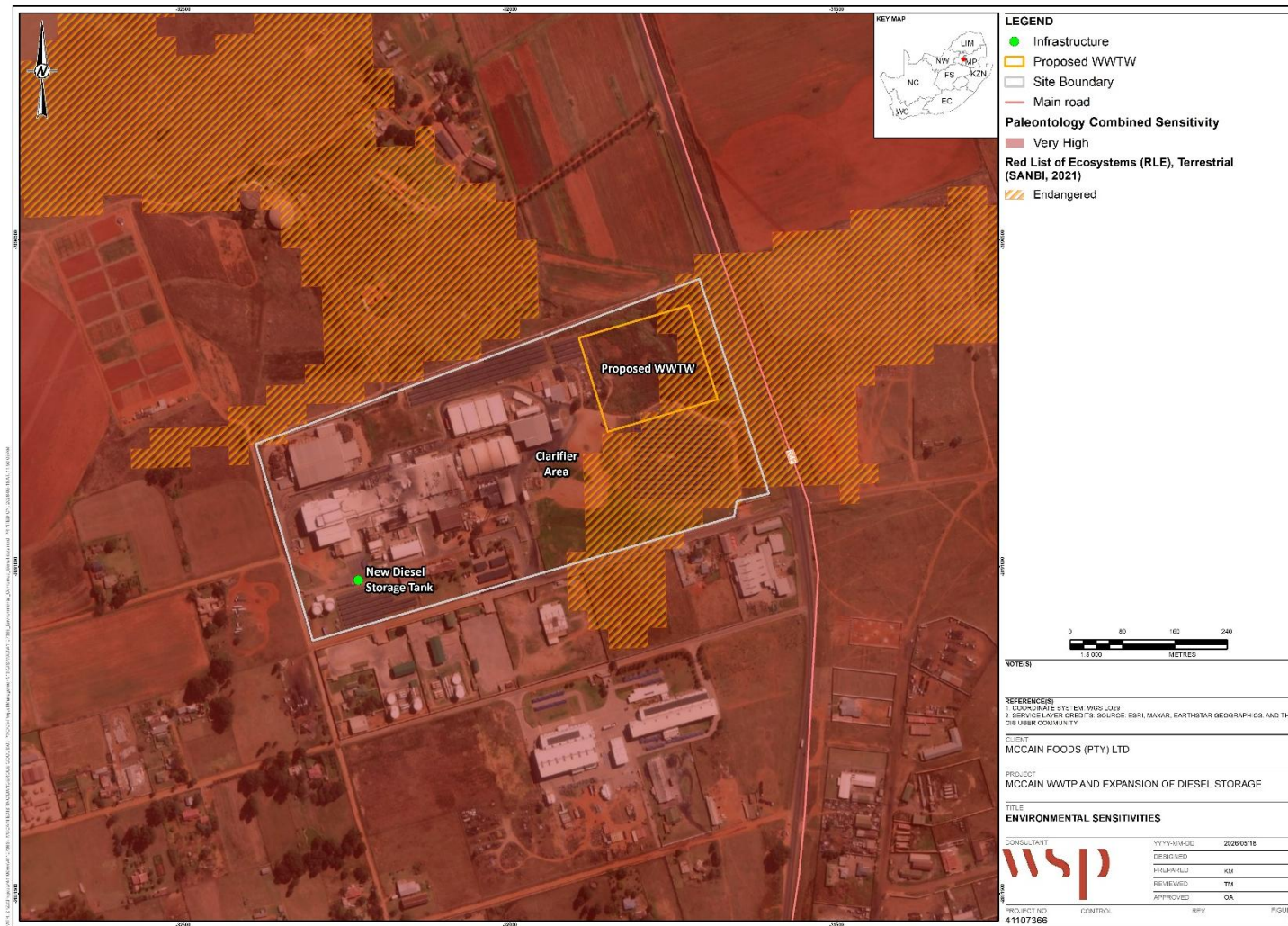


Figure 3-1 - Environmental sensitivity map / final site layout

4 GOVERNANCE FRAMEWORK

4.1 NATIONAL LEGAL AND REGULATORY FRAMEWORK

The South African regulatory framework establishes well-defined requirements and standards for environmental and social management of industrial and civil infrastructure developments. Different authorities at both national and regional levels carry out environmental protection functions. The key legislation and policies are shown below.

4.1.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO. 107 OF 1998)

Chapter 2 of the NEMA sets out a range of environmental and social principles that are to be applied by all organs of state when taking decisions that significantly affect the environment. Included amongst the key principles is that all developments must be socially, economically and environmentally sustainable. It requires that environmental management place people and their needs at the forefront of its concerns and serve their physical, psychological, developmental, cultural and social interests equitably. The NEMA also provides for the participation of stakeholders and stipulates that decisions must consider the interests, needs and values of all of them.

Chapter 5 of the NEMA outlines the general objectives and implementation of Integrated Environmental Management (IEM), which provides a framework for the integration of environmental issues into the planning, design, decision-making and implementation of plans and development proposals. Section 24 of the NEMA provides a framework for the granting of an EA. To give effect to the general objectives of IEM, the potential impacts on the environment of listed activities must be considered, investigated, assessed and reported on to the CA. Section 24 (4) provides the minimum requirements for procedures for the investigation, assessment and communication of the potential impacts of activities.

4.1.1.1 Environmental Impact Assessment Regulations, 2014

The EIA Regulations promulgated in terms of Chapter 5 of the NEMA and published in Government Notice (GN) No. R982, provide for the control of certain listed activities. These activities are listed in GN No. R983 (Listing Notice 1), R984 (Listing Notice 2) and R985 (Listing Notice 3) of 4 December 2014 (as amended) and are prohibited until an EA has been obtained from the CA. The Minister of Forestry, Fisheries and the Environment is responsible for the granting or refusing of an EA for the application to undertake proposed development activities in terms of the NEMA. Such EA, which may be granted subject to conditions, will only be considered once there has been compliance with GN No. R982.

The EIA Regulations set out the procedures and documentation that needs to be complied with when applying for an EA. A Basic Assessment (BA) process must be undertaken if the authorisation applied for is regarding an activity or activities included in Listing Notice 1 and/or 3; while a full Scoping and Impact Assessment process must be undertaken if the authorisation applied for is in respect of an activity or activities included in Listing Notice 2.

The proposed project triggers activities contained in Listing Notice 1 (Table 4-1).

Table 4-1 – Triggered Listed Activities

Legislation	Description of Legislation	Relevance to the project
Listing Notice 1: GNR 983 (as amended)	Activity 25 – The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater, or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.	The proposed WWTP will have a maximum daily treatment volume flowrate of 3 400 m ³ /day, therefore this activity is applicable.
Listing Notice 1: GNR 983 (as amended)	Activity 51 – The expansion of facilities for the storage, or storage and handling, of a dangerous good, where the capacity of such storage facility will be expanded by more than 80 cubic metres;	The current diesel storage capacity is 43.782 m ³ . The proposed expansion of diesel storage of capacity by 79 m ³ will result in a cumulative storage capacity of 122.782 m ³ ; therefore, this activity is applicable.

4.1.1.2 Competent Authority

According to Appendix 1 of Listing Notice 1 (GNR 327), the Competent Authority (CA) in respect of the activities listed in the Listing Notices is the CA in the province in which the activity is to be undertaken, unless—

- (a) it is an application for an activity contemplated in section 24C (2) of the Act, in which case the competent authority is the Minister or an organ of state with delegated powers in terms of section 42(1) of the Act; or
- (b) the listed or specified activity is or is directly related to—
 - (i) prospecting or exploration of a mineral or petroleum resource; or
 - (ii) extraction and primary processing of a mineral or petroleum resource; in which case the CA is the Minister responsible for mineral resources.

Since the project is to be undertaken in the Mpumalanga Province, the MDARDLEA is the CA.

4.1.1.3 Commenting Authorities

The commenting authorities for the project include:

- Mpumalanga Provincial Heritage Resources Authority;
- Mpumalanga Department of Water and Sanitation;
- Air Traffic & Navigation Services;
- South African Civil Aviation Authority;
- South African National Defence Force;
- Council for GEMsciences;
- Victor Khanye Local Municipality;
- Nkangala District Municipality; and
- Mpumalanga Tourism and Parks Agency.

4.1.2 NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT, 2004 (ACT 39 OF 2004)

The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) (NEMAQA) (as amended) regulates all aspects of air quality, including:

- Prevention of pollution and environmental degradation;
- Providing for national norms and standards (through a National Framework for Air Quality Management), regulating air quality monitoring, management and control; and
- Licensing of activities that result in atmospheric emissions and have or may have a significant detrimental effect on the environment.

The objectives of the NEMAQA are to:

- Protect the environment by providing reasonable measures for:
 - The protection and enhancement of air quality.
 - The prevention of air pollution and ecological degradation.
 - Securing ecologically sustainable development while promoting justifiable economic and social development.
 - Give effect to everyone's right "to an environment that is not harmful to their health and well-being" (Republic of South Africa, 1996).

Significant functions detailed in NEM: AQA include:

- The National Framework for Air Quality Management (Department of Environmental Affairs, 2018).
- Institutional planning matters
 - The establishment of a National Air Quality Advisory Committee.
 - The appointment of Air Quality Officers (AQO) at each level of government.
 - The development, implementation, and reporting of Air Quality Management Plans (AQMP) at national, provincial, and municipal levels.
- Air quality management measures:
 - The declaration of Priority Areas where ambient air quality standards are being, or may be, exceeded.
 - The listing of activities that result in atmospheric emissions and which have the potential to impact negatively on the environment and the licensing thereof through an atmospheric emissions licence (AEL).
 - The declaration of Controlled Emitters.
 - The declaration of Controlled Fuels.
 - Procedures to enforce Pollution Prevention Plans or Atmospheric Impact Reporting for the control and inventory of atmospheric pollutants of concern.
 - Requirements for addressing dust and offensive odours.

With respect to odour control, Section 35 of NEMAQA (under Part 6: Control measures in respect of dust, noise, and offensive odours) states the following:

- The minister or Member of the Executive Council may prescribe measures for the control of offensive² odours emanating from the specified activities.
- The occupier of any premises must take all reasonable steps to prevent the emission of any offensive odour caused by any activity on such premises.

4.1.2.1 Section 21 of the National Environmental Management: Air Quality Act – Listing of Activities

Section 21 of NEMAQA tasks the Minister with the responsibility of publishing a list of activities which result in atmospheric emissions, and which he/she reasonably believes have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions, or cultural heritage. This list applies nationally.

The current operations or proposed activities by McCain do not trigger any of the Listed Activities under Section 21 of NEMAQA (as amended). As such, McCain is not required to comply to any MES stipulated by these regulations nor hold an AEL.

4.1.2.2 Small Boilers as a Controlled Emitter

Since each boiler is below 10 MW and as indicated in the stack emission reports, the boilers at McCain fall below the limits for regulation under Section 21 of NEMAQA and the Declaration for Small Boilers as Controlled Pollutants and Establishment of Emission Standards of 2013 (Government Gazette 36973 Notice 831).

4.1.2.3 Section 30 of the National Environmental Management: Air Quality Act – Atmospheric Impact Reports

An AQO may require any person to submit to the air quality officer an AIR if s/he reasonably suspects that the person has on one or more occasion contravened or failed to comply with NEMAQA or any conditions of a license and that such contravention or failure has had, or may have a detrimental effect on the environment (including health, social and economic conditions or cultural heritage) or has contributed to the degradation of ambient air quality.

Any person required to submit an AIR must do so in the prescribed format published under Government Notice 747 in Government Gazette 36904 dated 11 October 2013; as amended by Government Notice R284 in Government Gazette 38633 dated 2 April 2015 (Department of Environmental Affairs, 2013; Department of Environmental Affairs, 2015).

4.1.2.4 Section 9 of the National Environmental Management: Air Quality Act – National Standards

Section 9 of NEMAQA tasks the Minister of the DFFE with the responsibility of identifying substances or mixtures of substances in the ambient air which, through ambient concentrations, bioaccumulation, deposition or in any other way, present a threat to health or well-being and the subsequent establishment of national standards for ambient air quality for these substances.

² 'Offensive odour' is defined by NEMAQA as any smell which is considered to be malodorous or a nuisance to a reasonable person.

Ambient air quality standards are defined as “targets for air quality management which establish the permissible concentration of a particular substance in, or property of, discharges to air, based on what a particular receiving environment can tolerate without significant deterioration” (Department of Environmental Affairs, 2000; in (WSP, 2025b). The aim of these standards is to provide a benchmark for air quality management and governance. Ambient air quality criteria apply to areas where the Occupational Health and Safety regulations (Republic of South Africa, 1993; in (WSP, 2025b) do not apply, which is generally outside the property or lease area.

The South African NAAQS for the pollutants that have been considered in this study are presented in Table 4-2 and became applicable for air quality management from their promulgation in 2009 (Department of Environmental Affairs, 2009; in WSP, 2025b) and 2012 (Department of Environmental Affairs, 2012; in WSP, 2025b). The NAAQS generally have specific averaging periods, compliance timeframes, permissible frequencies of exceedance and measurement reference methods.

Table 4-2 - South African National Ambient Air Quality Standards

Pollutant	Averaging Period	Concentration ($\mu\text{g}/\text{m}^3$)	Permissible Frequency Exceedance ⁽²⁾ of
PM ₁₀	24-hour	75	4
	1-year	40	0
PM _{2.5}	24-hour	40	4
		25 ⁽¹⁾	4
	1-year	20	0
		15 ⁽¹⁾	0
Benzene	1-year	5	0
SO ₂	10-minute	500	526
	1-hour	350	88
	24-hour	125	4
	1-year	50	0
NO ₂	1-hour	200	88
	1-year	40	0
CO	1-hour	30 000	88
	8-hour	10 000	11
O ₃	8-hour	120	11
Lead	1-year	0.5	0
⁽¹⁾ Effective date is 01 January 2030.			
⁽²⁾ This exceedance is applicable to a calendar year			

4.1.2.5 Criteria for Hydrocarbon Exposure

Total Volatile Organic Compounds (TVOCs) is the term used for a class of several hundred carbon based chemical compounds that evaporate easily into air. Some VOCs have no known human health effects while the toxicity and carcinogenicity of others is well established. Little is known about how VOCs combine in the atmosphere or what the potential cumulative impacts might be on the human body, making analysis, risk assessment and guideline setting difficult.

No local standards or international guidelines have been set for the assessment of cumulative ambient TVOC concentrations. Benzene is the only VOC with an established NAAQS in South Africa. For the purposes of this assessment, TVOC has been conservatively treated as equivalent to benzene. Therefore, if the benzene NAAQS is not exceeded, it can be considered a safe estimate for the overall impact of TVOCs.

4.1.2.6 National Dust Control Regulations

The NEMAQA, National Dust Control Regulations, were published in Government Notice Regulation (GNR) 827 of November 2013 (Government Gazette 36974). The National Dust Control regulations prescribe measures for the prevention and control of dust emissions from activities that may cause significant air pollution. These regulations require that any person conducting activities that result in the generation of dust must implement reasonable measures to prevent or minimise dust emissions, including the use of best practicable environmental options.

The National Dust Control Regulations, 2013, stipulate that dustfall at a particular site must not exceed the acceptable limit of 600 mg/m²/day, averaged over a 30-day period, for residential and light commercial areas. For industrial areas, the permissible dustfall rate is 1,200 mg/m²/day, also averaged over 30 days. These regulations require that dustfall be regularly monitored using standardised methods, and the results must be reported to the relevant authorities to demonstrate ongoing compliance with these standards.

Dust fallout is the deposition of dust or settleable particulate matter by virtue of their weight from ambient air. The Project will produce dust emissions during both the construction and operational phases.

4.1.3 NATIONAL ENVIRONMENTAL WASTE MANAGEMENT ACT, 2008 (ACT 59 OF 2008)

The National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEMWA) (as amended) regulates all aspects of waste management and has an emphasis on waste avoidance and minimisation. The NEMWA creates a system for listing and licensing waste management activities which may have a detrimental effect on the environment. Listed waste management activities (GN R.921, November 2013, as amended) above certain thresholds are subject to an impact assessment and licensing process prior to being commenced, undertaken or conducted.

The assessment and reporting process in support of a WML application must be undertaken in accordance with the EIA Regulations of 2014 (as amended). These regulations define the requirements for the submission, processing, consideration and decision of applications for the authorisation of listed activities. Activities listed in Category A require a BA process; while activities listed in Category B require a S&EIA process for authorities to consider an application in terms of NEMWA. Activities listed in Category C refers to general waste that poses minimal environmental or health risks and is subject to less stringent regulatory controls compared to more hazardous types of waste.

There are no new waste management activities in respect of which a waste management licence is required for the proposed project. However, Table 4-3 outlines Category C waste management activities which may require registration prior to commencement of the development.

Table 4-3 – Triggered activities in accordance with the NEMWA

Applicable Legislation	Description	Relevance to the project
Waste Management Activities in terms of GN R.921 (as amended) Category C	Activity 2 <i>The storage of hazardous waste at a facility that has the capacity to store in excess of 80 m³ of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or temporary storage of such waste.</i>	The temporary storage of sludge prior to off-site disposal may trigger this activity.
Waste Management Activities in terms of GN R.921 (as amended) Category C	Activity 7 <i>The treatment of organic waste using composting and any other organic waste treatment.</i>	The biodigester may trigger this activity.

4.1.4 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT 10 OF 2004)

The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA) was promulgated in June 2004 within the framework of NEMA to provide for the management and conservation of national biodiversity. The NEMBA's primary aims are for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. In addition, the NEMBA provides for the establishment and functions of a South African National Biodiversity Institute (SANBI).

SANBI was established by the NEMBA with the primary purpose of reporting on the status of the country's biodiversity and conservation status of all listed threatened or protected species and ecosystems.

The biodiversity assessment identifies Critical Biodiversity Areas (CBAs) that represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to meet national biodiversity objectives. As such, a Terrestrial Biodiversity assessment will be undertaken as part of the BA process.

The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) Regulations with regards to alien and invasive species have been superseded by the NEM:BA – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014.

The site for the WTP is classified as of Low sensitivity for plant species, Medium sensitivity for animal species and terrestrial biodiversity is classified as Very high by the DFFE's Screening Tool Report. The high rating is because the site falls within the Eastern Highveld Grasslands. However, site verification has since confirmed site sensitivity to be Low – see Section 3 for more details.

4.1.5 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT 57 OF 2003)

The National Environmental Management Protected Areas Act (Act 57 of 2003) (NEMPAA) concerns the protection and conservation of ecologically viable areas representative of South Africa's diversity and its natural landscapes and seascapes, and includes inter alia:

- The establishment of a national register of all national, provincial and local protected areas;
- The management of those areas in accordance with national standards; and
- Inter-governmental co-operation and public consultation in matters concerning protected areas.

Sections 48 to 53 of the NEMPAA lists restricted activities that may not be conducted in a protected area. Section 49 states that activities in protected areas are regulated or restricted to the extent prescribed by:

- Regulations made under Section 86 of the Act;
- Regulations made under Section 87, in the case of provincial and local protected areas;
- By-laws made by the relevant municipality, in the case of local protected areas; and
- Internal rules made by the managing authority of the area under Section 52.

The project does not fall within any protected areas.

4.1.6 SOUTH AFRICAN NOISE CONTROL REGULATIONS

In South Africa, environmental noise control has been in place for three decades, beginning in the 1980s with codes of practice issued by the South African National Standards (formerly the South African Bureau of Standards) to address noise pollution in various sectors of the country. Under the previous generation of environmental legislation, specifically the Environmental Conservation Act, 1989 (Act 73 of 1989) (ECA), provisions were made to control noise from a national level in the form of the Noise Control Regulations (GNR 154 of January 1992). In later years, the ECA was replaced by the NEMA as amended. The NEMAQA was published in line with NEMA and contains noise control provisions under Section 34:

“(1) The minister may prescribe essential national standards – (a) for the control of noise, either in general or by specific machinery or activities or in specified places or areas; or (b) for determining – (i) a definition of noise; and (ii) the maximum levels of noise. (2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards.”

Under NEMAQA, the Noise Control Regulations were updated and are to be applied to all provinces in South Africa. The Noise Control Regulations give all the responsibilities of enforcement to the Local Provincial Authority, where location specific by-laws can be created and applied to the locations with approval of Provincial Government. Where province-specific regulations have not been promulgated, acoustic impact assessments must follow the Noise Control Regulations. These regulations define the following:

- **Ambient Sound Level:** the reading on an integrating impulse sound level meter taken at a measuring point in the absence of any alleged disturbing noise at the end of a total period of at least 10 minutes, after such meter had been put into operation.
- **Zone Sound Level:** a derived dB(A) value determined indirectly by means of a series of measurements, calculations or table readings and designated by a local authority for an area.

- **Disturbing Noise:** a noise level which exceeds the zone sound level or, if no zone sound level has been designated, a noise level which exceeds the ambient sound level at the same measuring point by 7 dB(A) or more.

With the above definitions in mind, regulation 4 of the Noise Control Regulations stipulate that no person shall make, produce or cause a disturbing noise, or allow it to be made, produced or caused by any person, machine, device or apparatus or any combination thereof.

Furthermore, NEMAQA prescribes that the Minister must publish maximum allowable noise levels for different districts and National noise standards. These have not yet been accomplished and as a result all monitoring and assessments are done in accordance with the SANS 10103:2008 and 10328:2008 as discussed in the sections that follow.

4.1.7 NATIONAL WATER ACT, 1998 (ACT 36 OF 1998)

The National Water Act, 1998 (No. 36 of 1998) (NWA) (as amended) provides the framework to protect water resources against over exploitation and to ensure that there is water for social and economic development, human needs and to meet the needs of the aquatic environment.

The Act defines water source to include watercourses, surface water, estuary or aquifer. A watercourse is defined in the Act as a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which or from which water flows, and any collection of water that the Minister may declare a watercourse.

Section 21 of the Act outlines a number of categories that require a water user to apply for a Water Use License (WUL) and Section 22 requires water users to apply for a General Authorisation (GA) with the Department of Water and Sanitation (DWS) if they are under certain thresholds or meet certain criteria. The list of water uses that require a WUL under section 21 are presented below:

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

There are no new water use activities associated with the project and therefore no water use licence is required for the project.

4.1.8 NATIONAL HERITAGE RESOURCES ACT, 1999 (ACT 25 OF 1999)

The National Heritage Resource Act (Act 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by the South African Heritage Resources Agency (SAHRA) and lists activities that require any person who intends to undertake to notify the responsible heritage resources agency and furnish details regarding the location, nature, and extent of the proposed development.

In terms of the Section 38 of NHRA, any person who intends to undertake a linear development exceeding 300 m in length or a development that exceeds 5 000 m² must notify the heritage resources authority and undertake the necessary assessment requested by that authority.

Since the area of the WTTP exceeds 5000 m², a Phase 1 Heritage Impact Assessment and Palaeontological Impact Assessment have been undertaken for the proposed development. Based on the findings of the assessment, no permits in terms of this Act are required prior to commencement of the development.

4.1.9 MAJOR HAZARD INSTALLATION REGULATIONS

The McCain Delmas Plant is classified as a major hazardous installation (MHI) in terms of these regulations published under the Occupational Health and Safety Act, 1993 (Act 85 of 1993) (as amended) (OHSA). Two criteria define a site as a MHI:

- The General Machinery Regulations of the OHSA contain a list of hazardous materials with qualifying quantities for each. A site that stores more than the prescribed quantity of any of these materials is classified as an MHI; or
- An installation that could cause a major incident that will affect the public is also classified as an MHI. MHI risk assessments consider only sites with materials that could lead to catastrophic fires, explosions or toxic releases.

The following installations on the McCain Delmas site have been found to be MHIs (iSHEcon, 2021):

- Ammonia refrigeration system; and
- LPG cylinder storage.

An on-site emergency plan is available for the site. Off-site emergency planning is the responsibility of the local authorities, with involvement from the operating personnel at the facility when developing the plan.

4.2 POLICIES AND PLANS

Table 4-4 summarise key policies and plans as an outline of the governance framework for the project.

Table 4-4 – Applicable Policies and Plans

Applicable Plan	Description of Plan
Mpumalanga Biodiversity Conservation Plan (MBCP), 2006	In 2006 the MTPA and the Department of Agriculture and Land Administration (DALA) initiated the development of the MBCP. As the first such plan produced for the province, it was intended to guide conservation and land-use decisions in support of sustainable

Applicable Plan	Description of Plan
	<p>development. The MBCP provided a spatial framework that supported land-use planning and helped to streamline and monitor environmental decision-making. Since 2007, several technical advances and land use changes necessitated the need for an update of the MBCP. This resulted in the production of the Mpumalanga Biodiversity and Freshwater Sector Plans which provide a more comprehensive assessment of the biodiversity of the terrestrial and freshwater environment in Mpumalanga. These sector plans classify all land areas within the province into Critical Biodiversity Areas (CBAs), Ecological Support Areas (ESAs), Other Natural Areas (ONAs), Protected Areas (PAs), and areas that have been irreversibly modified from their natural state.</p> <p>The site for the WWTP is located within a heavily modified area. It is located within the Northern Escarpment Quartzite Sourveld that has a conservation status of Least Concern.</p>
Highveld Priority Area Air Quality Management Plans 2025	<p>McCain is located in the Mpumalanga Province that falls within the Highveld Priority Area (HPA). The Highveld area is associated with poor air quality and elevated concentrations of trace gas pollutants due to the region having a high concentration of industry, mining, power generation, and other non-industrial sources (Held <i>et al.</i>, 1996; Department of Environmental Affairs and Tourism (DEAT), 2006; in (WSP, 2025b). For this reason, the Minister of Environmental Affairs declared the region a priority area, namely the HPA in November 2007.</p> <p>The primary motive of the HPA declaration and the HPA Air Quality Management Plans (first generation) (HPA AQMP) is to achieve and maintain compliance with the National Ambient Air Quality Standard (NAAQS) across the HPA, using the constitutional principal of progressive realisation of air quality improvements. The HPA AQMP thus allows for the alignment of air quality practices with legal and regulatory requirements to ensure air quality management planning is implemented effectively (DEAT, 2007; in (WSP, 2025b).</p> <p>The second generation HPA AQMP published on 26 March 2025 by the DFFE aims to establish emission reduction targets by enhancing the understanding of how various interventions impact ambient air quality in the HPA, thereby supporting continued improvement and eventual compliance within the priority area.</p> <p>The McCain operation is located within the HPA and thus is required to operate within the air quality requirements of the HPA AQMPs and related regulations.</p>
Nkangala District Municipality Air Quality Management By-law of 2015	<p>Under the by-law air pollution is defined as any change in air composition caused by smoke, soot, dust (including fly ash), cinders, solid particles of any type, gases, fumes, aerosols, or substances that produce odour.</p> <p>In respect of small boilers, no person may install, modify, extend, or replace a small boiler without prior written approval from the Municipality. Authorisation will only be granted if:</p> <ul style="list-style-type: none"> ■ The application is submitted in the prescribed municipal format. ■ All required information is provided and reviewed. ■ The boiler can comply with applicable emission standards under the NEMAQA.

Applicable Plan	Description of Plan
	<p>For dust emissions anyone carrying out an activity or operating a facility that typically generates dust emissions harmful to health or causing a nuisance must implement effective control measures to prevent dust from entering the atmosphere.</p> <p>Regarding emissions that cause a nuisance, the by-law states that regardless of other provisions in the by-law, no person may create, cause, or permit emissions, including odours that result in a nuisance.</p> <p>“Nuisance” refers to any unreasonable or likely interference from air pollution that affects:</p> <ul style="list-style-type: none"> ■ The health or well-being of people or living organisms. ■ The use or enjoyment of property or the environment. ■ Ordinary comfort, convenience, or peace. <p>Furthermore, the By-Law defines the following:</p> <ul style="list-style-type: none"> ■ Ambient Sound Level: the reading on an integrating impulse sound level meter taken at a measuring point in the absence of any alleged disturbing noise at the end of a total period of at least 10 minutes, after such meter had been put into operation. ■ Measuring Point: this relates to a) a piece of land from which an alleged disturbing noise emanates, means a point outside the property projection plane where noise shall be measured in accordance with the provisions of SANS 10103 and/or SANS 10328; b) a building with more than one occupant, means a point in or outside the building where noise shall be measured in accordance with the provisions of SANS 10103 and/or SANS 10328; and c) a stationary vehicle, means a point as described in SANS 10181 where a measuring microphone shall be placed. ■ Disturbing Noise: a noise level that causes the ambient sound level measured continuously at the same measuring point to rise by 5 dB(A) or more. <p>With the above definitions in mind, the By-Law stipulates that no person may cause a disturbing noise, or allow it to be caused by any person, animal, machine, device, vehicle or apparatus or any combination thereof.</p>
Victor Khanye Municipality Air Quality Management By-law, 2018	<p>This by-law is the key regulatory document governing atmospheric pollution within the municipality. This by-law establishes measures for monitoring and managing air quality to protect public health, aligned with the NEMAQA.</p>
Nkangala District Municipality IDP, 2020/2022	<p>The Nkangala IDP lists wastewater treatment works at the Victor Khanye Local Municipality as a priority project. According to the IDP, construction work has not started.</p> <p>The McCain WWTP will ease the pressure on the Municipality, as the current effluent reports to the municipal sewer for further treatment at the municipal wastewater treatment works.</p>
Victor Khanye Municipality Waste Water By-law, 2021	<p>Key aspects of this by-law include:</p> <ul style="list-style-type: none"> ■ Approval and Discharge: No person may discharge anything other than stormwater into a public road, and wastewater discharge is subject to Municipality permission.

Applicable Plan	Description of Plan
	<ul style="list-style-type: none"> ■ Servitudes: The municipality enforces servitudes (generally 3 meters along street boundaries and 2 meters along rear boundaries) for sewer main pipes and maintenance. ■ Prohibitions: Building, structures, or large-rooted trees are prohibited within the servitude areas. ■ Maintenance: The municipality is responsible for the construction, maintenance, and removal of sewer mains. <p>A permit (Ref. No 12/2/2/14, dated 17 June 2022) in terms of this by-law for discharge of treated wastewater effluent to municipal sewer is in place for the site. The Local Municipality has set specific discharge compliance targets for the facility.</p>
Victor Khanye Municipality Waste Management By-law, 2017	<p>Victor Khanye Local Municipality regulates waste management through this by-law. Key aspects of this by-law include:</p> <ul style="list-style-type: none"> ■ Responsibility & Duty of Care: Every generator of waste must minimize waste, reuse/recycle where possible, and ensure environmentally sound disposal. ■ Separation at Source: The municipality encourages the separation of waste at the source to facilitate recycling. ■ Collection Regulations: Residents must use approved bin liners and ensure containers are properly closed and accessible for collection. ■ Prohibition of Nuisance: It is illegal to handle waste in a manner that causes injury, nuisance, or harm to the environment or human health. ■ Illegal Dumping: The municipality may remove illegally dumped waste and recover costs from the offender. ■ Handling Special Waste: Specific regulations apply to: <ul style="list-style-type: none"> • Bulky Garden Waste: Requires separate disposal from normal household waste. • Building Waste: Must be managed to prevent pollution and cannot be mixed with general household waste. • Health Care Risk Waste: Requires special handling to prevent infection. <p>McCain will need to adhere the requirements of this by-law in terms of waste management, especially during the construction phase of the project.</p>
Victor Khanye Local Municipality (VKLM) Fire Brigade Services By-law, 2020	<p>Victor Khanye Local Municipality (VKLM) Fire Brigade Services regulates dangerous goods through strict by-laws regarding storage and handling, categorizing hazardous substances into groups like flammable liquids (up to 113L), oxidizers (≤200 kg), and corrosives (≤1000 kg). Transport vehicles require specific permits, inspections, and orange placards identifying the cargo.</p> <p>McCain has the required permits for diesel storage on site and will need to update the permit once the new diesel tank has been installed.</p>
Victor Kanye Local Municipality IDP, 2021/2022.	<p>The plan serves as a strategic plan document for the municipality. It details the municipality's short-term and long-term objectives and strategies aligned with the Provincial and National Development Plan.</p>

Applicable Plan	Description of Plan
	McCain will utilise the IDP to identify the social profile of the municipality and align the project activities with the applicable municipal current and planned infrastructure and objectives.
Nkangala District Municipality's Integrated Development Plan (IDP) for 2024/2025	<p>The IDP outlines several key initiatives aimed at fostering economic growth, improving infrastructure, and enhancing service delivery across the district.</p> <p>McCain WWTP will create temporary jobs that will boost short term economic growth within the district.</p>

4.3 OTHER STANDARDS AND GUIDELINES

Table 4-5 – Other Applicable Standards and Guidelines

Legislation	Description of Legislation and Applicability
South African National Standard for Noise	<p>The South African National Standard (SANS) Method for Environmental Noise Impact Assessment (SANS 10328:2008) makes provision for evaluating the noise impacts of a proposed development. It is an umbrella document and makes many references to SANS 10103:2008. The measurement and rating of environmental noise with respect to annoyance and to speech communication (SANS 10103:2008).</p> <p>The SANS 10103 Code of Practice provides typical ambient noise rating levels (LReq,T) in various districts.</p> <p>It is probable that the noise is annoying or otherwise intrusive to the community or to a group of persons if the rating level of the ambient noise under investigation exceeds the applicable rating level of the residual noise (determined in the absence of the specific noise under investigation), or the typical rating level for the ambient noise for the applicable environment given.</p> <p>These standards have been used to inform the Noise Impact Assessment undertaken for the project.</p>
International Standards and Guidelines – Environmental Noise	<p>The World Health Organisations (WHO) together with the Organization for Economic Co-ordination and Development (OECD) have developed guidelines based on the effects of the exposure to environmental noise. WHO recommends a standard guideline value for average outdoor noise levels of 55 dB(A) is applied during the daytime to prevent significant interference with the normal activities of local communities. The relevant night-time noise level is 45 dB(A). WHO further recommends that, during the night-time, the maximum level of any single event should not exceed 60 dB(A) to avoid sleep disruption.</p>

5 MANAGEMENT PROCEDURES AND ADMINISTRATIVE REQUIREMENTS

5.1 ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

Formal responsibilities are necessary to ensure that key management measures/procedures are executed. McCain (the Project Proponent) (via the appointed Contractor where relevant) will be responsible for the overall control of the project site during the construction, operational, decommissioning phases of the project. McCain's responsibilities (via the appointed Contractor, where relevant) will include the following:

- Appointing an independent Environmental Control Officer (ECO) during construction and as specified by the CA;
- Being fully familiar with the BAR, and the EMPr;
- Applying for an amendment of the EA from the CA as and when required in line with the prevailing legislation;
- The overall implementation of the EMPr;
- Ensuring compliance by all parties, and the imposition of penalties for non-compliance;
- Implementing corrective and preventive actions, where required;
- Ensuring that any other necessary permits or licences are obtained and complied with;
- Preventing pollution and actions that will harm or may cause harm to the environment;
- Notifying the CA before commencement of the various project phases, as and when necessary; and
- Notifying the CA in writing if any condition in the EA cannot be or is not adhered to.

The specific roles and responsibilities for the EMPr implementation are detailed in Table 5-1.

Table 5-1 – Roles and Responsibilities

Designation	Roles and Responsibilities
MDARDLEA – Competent Authority	<ul style="list-style-type: none"> ■ Is the designated authority responsible for authorising this EMPr; ■ Shall also be responsible for approving any significant amendments that may be required to the EMP; and ■ May further perform random site inspections to check compliance with the EMPr.
Project Manager (PM) / Site Manager / Engineer / Site Engineer	<ul style="list-style-type: none"> ■ Ensure that McCain and the relevant contractor/s are aware of all specifications, legal constraints about the project during construction, specifically with regard to the environment; ■ Ensure that all stipulations within the EMPr and conditions of the EA are communicated and adhered to by McCain and its contractor(s); ■ Have overall responsibility for the implementation of the EMPr and conditions of the environmental authorisation; ■ Approve method statements; ■ Provide support to the ECO; ■ Monitor the implementation of the EMPr and conditions of the environmental authorisation throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes; ■ Ensure that audits are conducted to ensure compliance with the EMPr and conditions of the environmental authorisation;

Designation	Roles and Responsibilities
	<ul style="list-style-type: none"> ■ Be fully conversant with all relevant environmental legislation and ensure compliance therewith; ■ Be fully conversant with the BAR for the project, the conditions of the EA, and all relevant environmental legislation; ■ Confine construction activities to demarcated areas; and ■ Prevent actions that will harm or may cause harm to the environment and take steps to prevent pollution and unnecessary degradation on site.
Environmental Manager (EM)	<p>The EM is responsible for managing the day-to-day on-site implementation of the EMP, and for the compilation of environmental monitoring reports during construction. During the operational phase, environmental monitoring reports may be as specified by the MDARLEA (such as annually) by the external EM or ECO. In addition, the EM must act as liaison and advisor on all environmental and related issues, seek advice from the ECO when necessary, and ensure that any complaints received from I&APs are duly processed and addressed and that conflicts are resolved in an acceptable and timely manner. The EM could be an existing staff member of McCain or appointed as a member of the Contractor's team (and must be approved by McCain).</p> <p>The following qualifications, qualities, and experience are recommended for the individual appointed as the EM:</p> <ul style="list-style-type: none"> ■ A relevant environmental diploma or degree in natural sciences, as well as a minimum of three years' experience in construction site monitoring, excluding health and safety; ■ A level-headed and firm person with above-average communication and negotiating skills. The ability to handle and address conflict management situations will be an advantage, and ■ Relevant experience in environmental site management and EMP compliance monitoring. <p>The EM's responsibilities include, but are not limited to:</p> <ul style="list-style-type: none"> ■ Monitoring environmental specifications on site and compliance with the conditions of the EA, environmental legislation, and EMP; ■ Keeping a register of compliance / non-compliance with the environmental specifications; ■ Identifying and assessing unforeseen, actual, or potential impacts on the environment; ■ Ensuring that relevant environmental monitoring reports are submitted to the ECO; ■ Conducting site inspections during construction, and bringing any environmental concerns to the attention of the ECO and Contractor; ■ Advising the Contractor on the rectification of any pollution, contamination or damage to the construction site, rights of way and adjacent land; ■ Attending site meetings (scheduled and ad hoc); ■ Presenting the environmental awareness training course to all staff, contractors, and subcontractors, and monitoring the environmental awareness training for all new personnel on-site, as undertaken by the Contractor; ■ Ensuring that a copy of the EA and the EMP are available on site at all times, and maintaining a records-keeping system of all compliance and environmental documentation; ■ Ensuring that the Contractor is made aware of all applicable changes to the EMP that are approved by the MDARLEA; ■ Assisting the Contractor in drafting environmental method statements and/or the Environmental Policy where such knowledge/expertise is lacking;

Designation	Roles and Responsibilities
	<ul style="list-style-type: none"> ■ Undertaking environmental monitoring to ensure the Contractor's activities do not impact the receiving environment. Such monitoring shall include dust, noise, and water monitoring; and ■ Maintaining the following on site: <ul style="list-style-type: none"> • A site diary. • A non-conformance register (NCR). • An I&AP communications register. • A register of audits. • Records of all communication received in relation to compliance actions. <p>The EM will remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to the Operator.</p>
Independent ECO	<p>A suitably qualified independent ECO must be appointed by McCain to monitor the project's compliance with the EMPr and conditions of the environmental authorisation during construction. Proof of the external ECO appointment must be maintained on site. Responsibilities of the ECO include:</p> <ul style="list-style-type: none"> ■ Be fully conversant with the BAR, the conditions of the EA and the EMPr; ■ Be fully conversant with all relevant environmental legislation and ensure compliance thereof; ■ Approve method statements; ■ Remain employed until the completion of the construction activities; and ■ Report to the Project Manager, including all findings identified on site. <p>In addition, the ECO will:</p> <ul style="list-style-type: none"> ■ Undertake independent inspections of the site and surrounding areas in order to audit compliance with the EMPr and conditions of the EA; ■ Take appropriate action if the specifications contained in the EMPr and conditions of the environmental authorisation are not followed; ■ Monitor and verify that environmental impacts are kept to a minimum, as far as possible; and ■ Ensure that activities on-site comply with all relevant environmental legislation.
Contractors, Staff, and Service Providers	<ul style="list-style-type: none"> ■ Prepare Method Statements as per the EMPr, and ensure all activities are conducted as per the approved Method Statements; ■ Regular on-site auditing to assess performance against the requirements of this EMPr; ■ Complete the appropriate training requirements as specified in the training programme; and ■ Implement and maintain environmental management controls as set out in the project's environmental management documentation.

5.2 ENVIRONMENTAL AWARENESS PLAN

Legislation requires that McCain (via the appointed Contractor where relevant) must develop an environmental awareness plan that describes the manner in which McCain intends to inform employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with to avoid pollution or the degradation of the environment. In recognition of the need to protect our environment, environmental management should not only be seen as a legal obligation but also as a moral obligation.

It is important to ensure that all relevant personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental degradation and harm.

To achieve effective environmental management, it is important that employees, contractors (including subcontractors) are aware of the responsibilities in terms of the relevant environmental legislation and the contents of the EMP, conditions of the environmental authorisation.

McCain will provide appropriate resources to facilitate social and environmental awareness training during the construction, operational, and decommissioning phases of the project. McCain will require that all managers associated with the project adhere to the mitigation/management measures detailed in the EMP and identify, evaluate, and minimise risks to the social, physical and biophysical environments. This will be implemented by educating employees in social and environmental matters and responsibilities relating to the performance of their assigned tasks. Furthermore, employees will be entrusted to maintain the necessary level of environmental performance for their activities. Contractors and their associated subcontractors will also need to demonstrate compliance with mitigation / management measures included in the EMP.

The following methodology described must be used to implement and ensure environmental and social awareness and competence:

5.2.1 INTERNAL COMMUNICATION

Internal Communication of environmental issues to ensure environmental awareness may be achieved by using any combination of the following means:

- Meetings;
- Memos;
- Notice boards;
- Briefs;
- Reports;
- E-mail;
- Telephone; and
- Induction training.

5.2.2 STANDARD MEETINGS

The following standard meetings will be held at specific times to ensure that environmental and social awareness, potential problems, complaints, etc. are heard and addressed proactively:

- Monthly site briefing meetings between the contractors and the team members;
- Safety, Health and Environmental Meetings will be held weekly during construction by the relevant personnel, and environmental and social issues will form part of the agenda; and
- Communication between all personnel and senior management will be facilitated through the appropriate reporting lines or by using complaint and incident forms.

5.2.3 ENVIRONMENTAL AND SOCIAL TALK TOPICS

Monthly environmental and social talk topics must be compiled and distributed/shared to relevant personnel and must be displayed on appropriate notice boards or shared by whatever means established on site. As a minimum, the following topics must be considered during the course of the construction phase:

- Hazardous chemicals;
- Air Quality i.e., dust;
- Waste Management;
- Fauna and Flora;
- Emergency Procedures;
- Incidents Reporting;
- Systems;
- Noise;
- Speed Limits;
- Health Risks (such as HIV/ Aids); and
- General Awareness (e.g., World Environment Day, National Arbor Day).

5.2.4 GENERAL COMMUNICATIONS

Communication to the community, government, landowners, neighbouring landowners, environmental groups, non-government organisations, and other stakeholders will be communicated to ensure environmental and social awareness by means of the following:

- E-mail;
- Telephone; and/or
- Formal meetings.

5.2.5 TRAINING

It is important to ensure that all personnel, contractors, and their sub-contractors have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm. As a minimum, environmental training must include the following:

- Employees must have a basic understanding of the key environmental features of the site and the surrounding environment;
- Employees will be thoroughly familiar with the requirements of the EMPr and the environmental specifications as they apply to the project;
- Employees must undergo training for the operation and maintenance activities associated with the project and have a basic knowledge of the potential environmental impacts that could occur and how they can be minimised and mitigated;
- Awareness of any other environmental matters, which are deemed to be necessary by the Environmental Officer; and
- Training must include the environment, health, and safety as well as basic HIV/AIDS education.

The following facets of training form part of this Environmental Awareness Plan:

- **Induction:** Environmental awareness training will be given at induction when personnel join the company and/or return from leave. Induction training will also be given to visitors entering the site. Induction training will include, inter alia:
 - A discussion on the environment concept, what it comprises, and how we interact with it;
 - A description of the components and phases of the specific renewable power generation facility;
 - A general account of how the facility and its associated activities can affect the environment, giving rise to what are called environmental impacts; and

- A discussion on what staff can do to help prevent the negative environmental impacts from degrading the environment, i.e., environmental impact management.
- **Job Specific Training:** Job-specific training programmes will be developed as and when required. The programmes will be based on the significant environmental and social aspects/impacts that are identified during regular audits and site inspections. Supervisory staff will be equipped with the necessary knowledge and information to guide their employees on environmental and social aspects applicable to performing a specific task.
- **Competency Training:** The Environmental Officer will be responsible for the environmental and social competency and awareness training of Middle Management and supervisors. This training will be performed both on a one-on-one basis and through workshops and presentations. Competence and the effectiveness of training and development initiatives will be determined through the following methods:
 - Trend analysis of incidents reported; and
 - Analysis of work areas during visits and audits.

The process to declare the competency of personnel is documented in the ISO9001:2000 procedure. This plan will be amended periodically in light of operational changes, learning experiences during its implementation, and other activities that can affect the risk profiles.

- **Training Records:** Training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. Persons having received training must indicate in writing that they have indeed attended a training session and have been notified in detail of the contents and requirements of the EMP. The attendance registers must be kept on file.

To ensure accountable and demonstrated implementation of the EMP, several reporting systems, documentation controls, and compliance mechanisms must be in place.

5.3 MONITORING

The EM will monitor the day-to-day site activities on an ongoing basis and will produce monitoring reports during construction. The independent, external ECO will undertake monthly audits to ensure compliance with the EMP and conditions of the environmental authorisation during the construction activities and will report to the Site Manager should any non-compliance be identified, or corrective action deemed necessary.

During the operational phase, McCain (via the appointed contractor/operator) will establish, implement, and maintain a procedure to monitor and measure, regularly, the key characteristics of the operations that may have a significant environmental impact. The procedure shall include the documenting of information to monitor performance, applicable operational controls, and conformity with the operation's environmental objectives and targets.

McCain will ensure that all instruments and devices used for the measurement or monitoring are calibrated and appropriately operated and maintained. Calibration records must be kept on site or in proximity to the equipment for ease of availability.

All the conditions outlined in the EMP will be subject to required internal day-to-day monitoring and external compliance monitoring.

5.3.1 PROJECT-SPECIFIC MONITORING PROGRAMME

5.3.1.1 Soil, Land Use, and Land Capability

Table 5-2 summarises the proposed monitoring for soil, land use, and land capability. The soil, land, and land capability monitoring procedure defines what needs monitoring, how it should be done, and how often.

Table 5-2 – Soil, land use, and land capability monitoring procedure

Source Activity	Impacts Requiring Monitoring Programmes	Functional Requirements for Monitoring	Roles and Responsibilities (For the execution of the monitoring programmes)	Monitoring and Reporting Frequency and Time Periods for Implementing Impact Management Actions
Land clearance and vegetation removal	Soil loss / erosion	Inspect disturbed/cleared areas for signs of erosion. Inspect adjacent land / perimeter of site to ensure no disturbance or soil erosion due to project activities occurs.	EM / ECO to inspect areas for signs of erosion	Weekly erosion inspection during active construction - and more frequently during heavy rainfall periods
Construction of infrastructure	Soil quality degradation, Soil loss / erosion	Inspect construction footprints and adjacent land / perimeter of site for signs of hydrocarbon, cement, or construction waste spillages.	EM	Weekly during active construction
Handling of waste/chemicals/diesel	Soil quality degradation	Inspect chemical/waste/diesel storage areas for signs of spillages	EM	Bi-weekly during operations
Accidental waste / chemical / diesel spillages	Soil quality degradation	After spill is contained and cleared according to spill plan, undertake soil quality screening assessment to establish contamination status. Assessment only required in event of spillage on open / exposed soil areas.	Appoint soil specialist to assess contamination status and risk	As required

5.3.1.2 Groundwater

Existing Monitoring Network

Four existing boreholes are available for monitoring the water use impacts on the site area, namely MCF1, MCF-1, BH-1 and BH-2, indicated in Figure 5-1 and represent the “on-site” monitoring boreholes (Golder 2021).

Monitoring Borehole BH-2 is situated in the main abstraction zone area and cover BH-3B and BH04, and BH-1 is close to the northern production borehole BH-1B. Due to space restrictions in Monitoring Borehole BH-1, it has previously been recommended that the existing pump column is removed since this borehole is not used for abstraction, but (probably) fit for water level monitoring (Golder 2021).

There are seven (7) hydrocensus boreholes (viz. Golder 2021 hydrocensus survey) of which at least three (3) sites should be included as regional monitoring sites (with agreement from the landowners). The following boreholes have previously been recommended as “Far Field” monitoring sites (Figure 5-2):

- MCH-02 (Private land, probably impacted by McCain abstractions);
- MCH-06 (Private land, irrigation borehole, no impact notices); and
- MCH-07 (Private land, occasional irrigation, no impacts noticed).

On-site Monitoring Frequency and Parameters

The following groundwater monitoring frequency has previously been recommended (Golder, 2021):

- Groundwater levels at the selected Monitoring Borehole sites:
 - Site area – monthly intervals in boreholes BH-1, BH-2 (MCF3A) and MCF-2.
- Groundwater abstraction volumes:
 - Weekly water-flow meter readings from all abstraction boreholes, i.e., BH-1B, BH-3(MCF3B) and BH04; and
 - A tabular format of this information on a weekly interval is required to support future monitoring protocols and numerical modelling updates.
- Delmas Municipal water supply:
 - Weekly water volume “imported” from local municipal water source. This water supply is regarded as a “secured short term source” for (i) firefighting in the plant and/or the site area and (ii) securing short-term daily water supply during critical periods of national line power supply.
- Groundwater quality characteristics:
 - Quarterly scheduled sampling and hydrochemistry analyses for the following boreholes:
 - BH-1B;
 - BH-3(MCF-3B); and
 - BH-4.
 - Quarterly water quality analysis for the following hydrochemical constituents:
 - The analytical suite of the groundwater samples included (i) the major cations (Na, K, Mg, Ca), major anions (Cl, F, SO₄), (ii) physio-chemical parameters (pH, conductivity, Total Dissolved Solids and Total Alkalinity) and (iii) trace elements (including Fe, Cr, Se, Pb, Mn, Al, Zn, NO₃ and others determined by ICP-OES) (Golder 2021).

Far Field Monitoring Sites (i.e. background response monitoring)

At least three (3) of the Far Field hydrocensus sites, i.e., MCH-02, MCH-06 and MCH-07 should be selected with the landowner’s permission as the background monitoring sites and should address the following parameters:

- Quarterly water level measurements at:
 - At least two surrounding property owners (for example MCH-02 and MCH-07) should be measured.
- Quarterly water quality analyses at:
 - At least three surrounding property owners (for example MCH-02 and MCH-06 or -07 – using the same hydrochemical constituents' parameters as the required "on site" water quality analysis) should be sampled.
- Status of water use on the premises, i.e., domestic/stock watering uses and/or irrigation water use must be noted on each quarterly survey (Golder, 2021).

Recommendations for Proposed Project

The following recommendations are made:

- The groundwater monitoring programme needs to be maintained and expanded to include the private boreholes (far field monitoring) surrounding the site area. This includes:
 - Water levels;
 - Water quality analyses;
 - Groundwater abstraction rates/volumes should be monitored with flow meters at each of the three abstraction boreholes as described above; and
 - Monitoring is also required from the proposed far field monitoring boreholes as described in the section above.
- An additional monitoring borehole should be installed down-gradient of the proposed WWTP (north-west site corner of the site) prior to construction phase. This borehole will act as early warning system for any possible contamination migrating of site.
- Any additional monitoring should form part of the existing ISO14001 data management system.
- Store and assess the monitoring data.

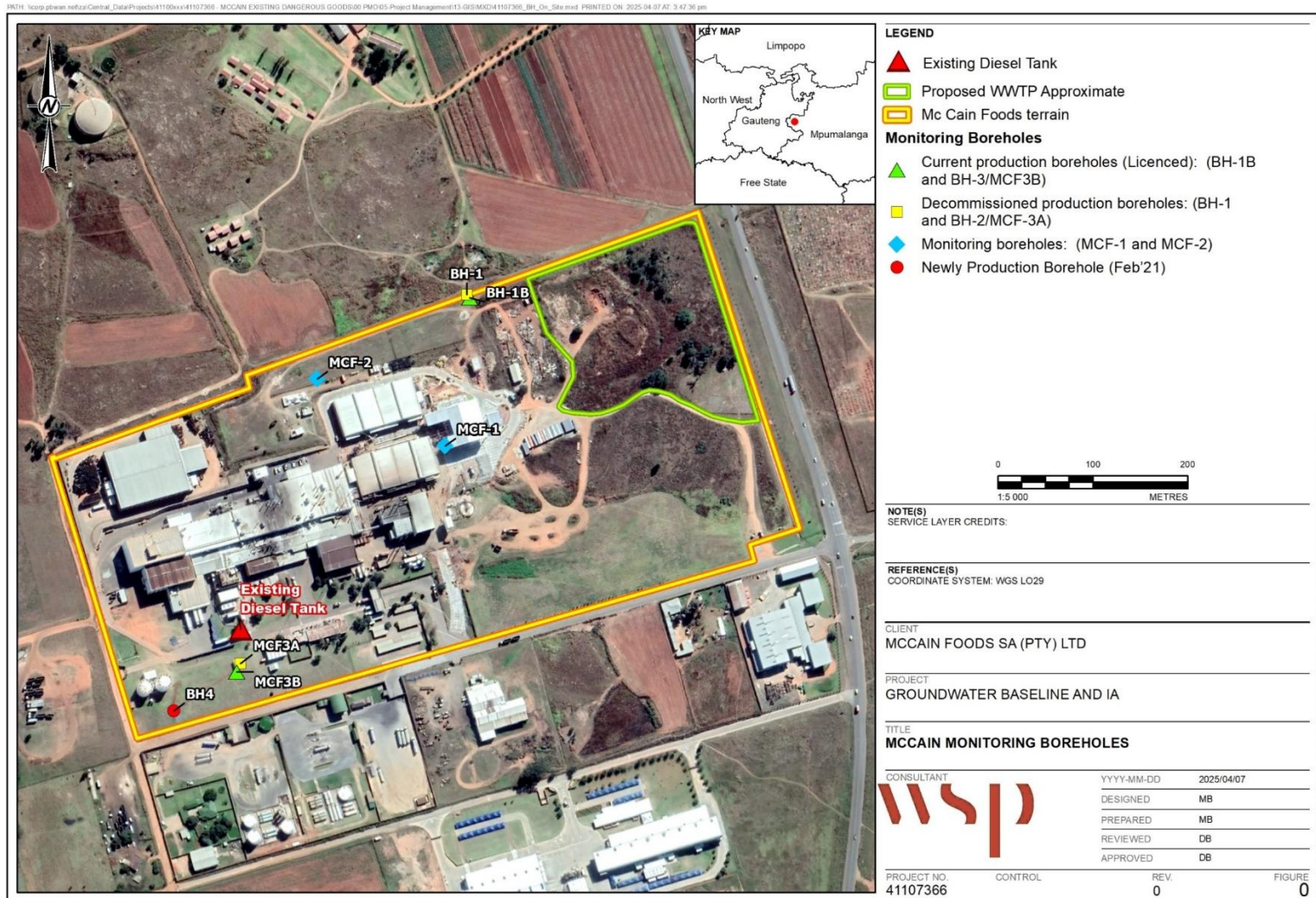


Figure 5-1 - McCain Delmas Monitoring Network (Adapted Golder, 2021)

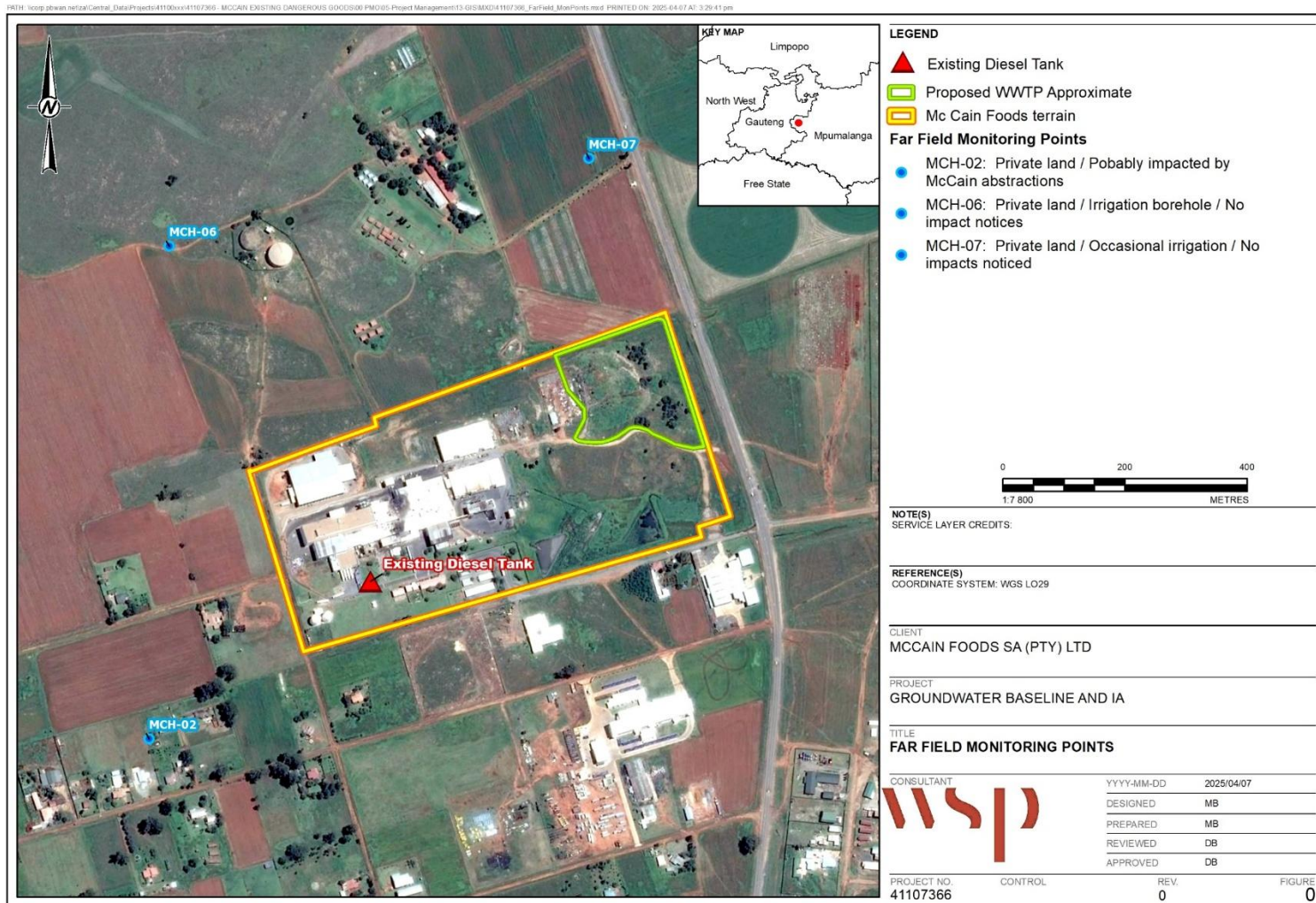


Figure 5-2 - Far Field Monitoring Points (Adapted Golder, 2021)

5.4 NON-CONFORMANCE AND CORRECTIVE ACTION

The auditing of the construction and operational activities may identify non-conformances to the EMPr, and conditions of the EA. Non-conformances may also be identified through incidents, emergencies, or complaints recorded. In order to correct non-conformances, the source must be determined, and corrective actions must be identified and implemented.

5.4.1 COMPLIANCE WITH THE EMPR AND CONDITIONS OF THE ENVIRONMENTAL AUTHORISATION

- A copy of the EMPr and conditions of the EA will be available on site at all times for the duration of the construction and operational activities;
- All persons employed by a contractor or their sub-contractors will abide by the requirements of the EMPr and conditions of the EA;
- Any members of the workforce found to be in breach of any of the specifications contained within the EMPr and conditions of the EA may be ordered by the Project Manager to leave the site. A contractor will not direct a person to undertake any activity which would place them in contravention of the specifications contained within the EMPr and conditions of the EA;
- Should a contractor be in breach of any of the specifications contained in the EMPr and conditions of the EA, the Project Manager will, in writing, instruct the contractor responsible for the incident of non-compliance regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions, implement a penalty and/or indicate that work will be suspended should non-compliance continue;
- Should non-compliance continue, further written notification will be forwarded to the contractor responsible for the incident of non-compliance outlining the required corrective and/or remedial action, the timeframe for implementation, penalties, and/or work will be suspended as specified previously; and
- Departmental officials will be given access to the project site for the purpose of assessing and/or monitoring compliance with the EMPr and conditions of the EA, at all reasonable times.

5.4.2 DUTY OF CARE

All personnel involved with the construction and operational activities on site will be responsible for implementing measures to prevent pollution or degradation of the environment from occurring, continuing or recurring. Failure to comply with the above conditions is a breach of the duty of care. If such harm is unavoidable, steps must be taken to minimise and rectify such pollution or degradation of the environment.

5.5 DOCUMENTATION AND REPORTING

The following documentation must be kept on site in order to record compliance with the EMPr and conditions of the environmental authorisation:

- Record of complaints; and
- Record of emergencies and incidents.

The contractor will be required to report on the following:

- Environmental incidents involving contractor/ employees and/or the public;
- Environmental complaints and correspondence received from the public; and
- Incidents that cause harm or may cause harm to the environment.

The above records will form an integral part of the ECO's reports and records and will be maintained for the duration of the project. These records will be kept with the EMPr and conditions of the EA and will be made available for scrutiny if requested by the Project Manager or his/her delegate and the ECO.

The contractor will ensure that the following information is recorded for all environmental complaints/incidents/emergencies:

- Date of complaint/incident/emergency;
- Location of complaint/incident/emergency;
- Nature of complaint/incident/emergency;
- Causes of complaint/incident/emergency;
- Party/parties responsible for causing the complaint/incident/emergency;
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident/emergency;
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident/emergency;
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions;
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented; and
- Copies of all correspondence received regarding complaints/incidents/emergencies.

5.6 PUBLIC COMPLAINTS

McCain has an established external Environmental Complaints Register. The register is maintained to record, manage, and respond to any environmental comments or complaints raised by external parties, including members of the general public and regulatory authorities.

The existing complaints register must:

- Have numbered pages; any missing pages must be accounted for by the Contractor.
- Be tabled during monthly site meetings; and
- Be made available to the PM/Contract Manager, the ECO, the Project Proponent, and/or any authority at any time if requested.

All complaints must be investigated, responded to, and recorded in the Complaints Register within 28 calendar days.

6 SITE-SPECIFIC ENVIRONMENTAL CONTROLS

The EMPr contains guidelines, operating procedures, and rehabilitation requirements that will be binding to the onsite personnel working for, or on behalf of, McCain. The EMPr must be carefully studied, understood, implemented, and adhered to at all times.

In instances where the method statements provided by the contractor conflict with the EMPr, such conflicts will be discussed between the Project Manager, ECO, and contractor, and if unresolved, the EMPr will take precedence.

The EMPr identifies various actions that are undertaken throughout the construction and operational phases of the proposed project. Not every action will be required during the entire course of activities. Therefore, the actions identified in the EMPr have been given priority timeframes for proposed implementation. The columns in the structure of the EMPr have been described Table 6-1 below.

Table 6-1 – Structure of EMPr

Column	Description
Activity/Aspect	Highlights the various activities/aspects associated with the project, i.e., the project's activities that will interact with the environment.
Impact Management Outcome	The desired outcomes are effectively minimising negative impacts and/or enhancing positive impacts.
Impact Management Actions/Measures	Indicates the actions required to prevent and /or minimise the potential impacts on the environment that are associated with the project.
Indicator and Compliance Management	Items that will assist with determining compliance against management actions.
Responsibility	Indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr. Please note that the Project Manager will have the authority to stop works if/as necessary.
Priority Timeframe	Indicates when the actions for the specific aspect must be implemented and/or monitored.

Table 6-2 – Air Quality: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.1 AIR QUALITY			
Impact Management Outcome: <ul style="list-style-type: none"> Minimise fugitive emissions Prevent or minimise all forms of air pollution 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Environmental, and external incident and complaints management system register; Close out on incidents; Monitoring and audit reports; Inductions training and register; and Environmental awareness programme/toolbox talks. 			
<ul style="list-style-type: none"> Excavation and material stockpiling activities Rehabilitation of disturbed areas 	All stockpiles must be restricted to designated areas and may not exceed a height of 2 m.	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Construction Phase Decommissioning Phase
	Plan excavation activities so that they are completed just prior to the time they are needed.		
	Observe weather conditions and do not commence or continue excavation activities if conditions are unsuitable e.g., under conditions of strong winds.		
	Pre-water areas to be disturbed.		
	Dampen exposed soil to suppress dust if required. Use watering sprays on materials to be loaded and during loading. Use environmentally friendly dust suppressants.		
	Re-vegetate disturbed areas as soon as possible to prevent excessive dust from occurring.		
	Cover trucks hauling any loose material that could produce dust when travelling.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<ul style="list-style-type: none"> Trucking materials on unpaved roads 	Minimise transfer points.	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Construction Phase Decommissioning Phase
	Where possible, minimise speed limits, vehicle weights and the number of vehicles using unpaved roads.		
	Apply dust suppression measures on roads where relevant.		
<ul style="list-style-type: none"> General 	Maintain appropriate operational controls and adhere to manufacturer stipulated repair and maintenance requirements for all equipment.	<ul style="list-style-type: none"> Operator Environmental Manager 	<ul style="list-style-type: none"> Operational Phase
<ul style="list-style-type: none"> Operating storage tanks 	Maintain appropriate operational controls (e.g. appropriate temperature and pressure settings for storage vessels and loading operations).		
	Conduct regular equipment inspections for visible/audible/odorous leaks.		
	Conduct regular checks and periodic replacement of components including pump seals, compressor seals, pipeline valves, open-ended valves, flanges, and other connections (as applicable) in line with manufacturer specifications.		
	Maintain meticulous record keeping of all inputs, throughputs, and production rates, including loading and dispatch quantities for each tank to allow for a more accurate accounting of evaporative losses and emission inventory updates going forward.		
<ul style="list-style-type: none"> Operating the WWTP 	Investigate the feasibility of the development of a Vegetative Environmental Buffer (VEB) along the eastern boundary of the proposed development site, to ameliorate odours by slowing wind and allowing dilution of odour, encouraging particulate and aerosol deposition, physical interception of dust and aerosols onto which odorous compounds can adhere, and offering a sink for the chemical constituents of odour. Use indigenous leafy trees that maintain their leaves throughout the year. Multiple rows of trees (with taller and shorter but bushier species alternating) will increase effectiveness of the barrier. Additional value of the VEB is protection from bioaerosols, noise mitigation and improved visual aesthetics.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Should complaints arise regarding odours from the WWTP, conduct fence line measurements of H ₂ S, which will provide a real-time indicator of odour impact. If required, apply masking agents.	<ul style="list-style-type: none"> Operator Environmental Manager 	<ul style="list-style-type: none"> Operational Phase
	Complaints and any actions arising from a complaint must be recorded in the complaints register maintained by site management.		
	Warn communities to expect potential odour events during upset conditions (e.g. during desludging or when extended maintenance is scheduled) to generate increased trust and facilitate communication between parties.		
	Maintenance/desludging should be scheduled (where possible) for periods with dry and cool conditions, particularly when prolonged repair work or sludge drying is anticipated. Drier conditions will accelerate sludge drying, shortening the duration in which peak impacts may occur. Odorous emissions are generally higher in warmer months due to increased gas volatility.		
	Conduct training of the workforce at all levels (i.e. workers, foremen, managers) in awareness of air emissions. This can be included in site induction courses and should focus on promoting understanding as to why operational controls are in place and should be adhered to.		

Table 6-3 – Environmental Noise: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.2 ENVIRONMENTAL NOISE			
Impact Management Outcome: <ul style="list-style-type: none"> Reduce noise impacts on surrounding sensitive receptors as far as possible Minimise disturbance of the natural environment Prevent or minimise all forms of pollution 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Environmental, and external incident and complaints management system register; Close out on incidents; Monitoring and audit reports; Inductions training and register; Environmental awareness programme/toolbox talks; and Equipment, machinery and vehicle maintenance. 			
All construction activities	<ul style="list-style-type: none"> Plan construction activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance. Information regarding construction activities should be provided to all local communities. Such information includes: <ul style="list-style-type: none"> Proposed working times; Anticipated duration of activities; Explanations on activities to take place and reasons for activities; and Contact details of a responsible person on site should complaints arise. 	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Construction Phase Decommissioning Phase
	<ul style="list-style-type: none"> When working near a potential sensitive receptor, limit the number of simultaneous activities to a minimum as far as possible. 		
All construction activities	<ul style="list-style-type: none"> Equipment with the lowest possible sound power levels must be selected. 	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Construction Phase Decommissioning Phase
	<ul style="list-style-type: none"> Ensure that equipment is well-maintained to avoid additional noise generation. 		
	<ul style="list-style-type: none"> Unnecessary revving of engines and switching equipment off must be avoided when not required. 		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	<ul style="list-style-type: none"> Use rubber linings in, for example, chutes and dumpers to reduce impact noise. 		
	<ul style="list-style-type: none"> Use noise control devices such as temporary noise barriers and deflectors for high impact activities and use exhaust muffling devices for combustion engines. 		
	<ul style="list-style-type: none"> Reduce the drop height of materials whenever practical. 		
	<ul style="list-style-type: none"> Plant and vehicles must be started up sequentially rather than simultaneously. 		
	<ul style="list-style-type: none"> Acoustic enclosures for equipment causing radiating noise must be installed, where practical. 		
	<ul style="list-style-type: none"> Reduce any project traffic through community areas where possible. 		
	<ul style="list-style-type: none"> Ensure that all on-site personnel are equipped with the correct personal protective equipment including noise control hearing devices. 		
WWTP operations	<ul style="list-style-type: none"> Ensure that all equipment is well-maintained to avoid excessive noise generation. 	<ul style="list-style-type: none"> Operator Environmental Manager 	<ul style="list-style-type: none"> Operational Phase
WWTP operations	<ul style="list-style-type: none"> When replacing equipment, ensure that equipment with the lowest sound power level specifications is selected, where possible. 	<ul style="list-style-type: none"> Operator Environmental Manager 	<ul style="list-style-type: none"> Operational Phase
	<ul style="list-style-type: none"> Suitable mufflers on engine exhausts must be installed. 		
	<ul style="list-style-type: none"> Acoustic enclosures for equipment causing radiating noise must be installed where possible. 		
	<ul style="list-style-type: none"> Equipment must be suitably sized for the proposed task. 		
	<ul style="list-style-type: none"> A mechanism to record and respond to complaints must be developed. 		
	<ul style="list-style-type: none"> Should any complaints arise, annual fence line noise monitoring campaigns should be established to determine the source of such noise, which will allow for the implementation of corrective action / mitigation strategies. 		

Table 6-4 – Geotechnical: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.3 GEOTECHNICAL			
Impact Management Outcome: <ul style="list-style-type: none"> Limit stability risks and sinkhole formation 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Maintenance records; Monitoring and audit reports; and Training records. 			
WWTP design, construction and operations	<ul style="list-style-type: none"> The services of a blasting specialist be retained during the preparation of construction specifications to ensure that drilling and blasting methods used are appropriate to site conditions. 	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Pre-construction phase Construction phase
	<ul style="list-style-type: none"> Temporary slopes cut into in situ soils should be battered to 1V:2.5H or shallower. 		
	<ul style="list-style-type: none"> Where steeper slopes are desired/required the installation of appropriate lateral support must be conducted. 		
	<ul style="list-style-type: none"> The designs of permanent slopes/excavations should take account of the dimensions of structures, purpose, their design life and the geotechnical material properties of foundations and construction materials. 		
	<ul style="list-style-type: none"> All foundations should be designed to span a sinkhole with a minimum diameter of 5 m. 		
	<ul style="list-style-type: none"> An experienced engineering geologist or geotechnical engineer must inspect the site periodically during the construction phase of the project in order to identify any unforeseen adverse conditions in terms of sinkhole formation and devise appropriate preventative and/or remedial actions. 	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Construction phase

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	<ul style="list-style-type: none"> In order to limit the risk of mobilisation of blanketing materials, stringent precautionary measures and limits should be put in place in terms of stormwater management, the protection of wet services and the dewatering of groundwater. A site-specific Dolomite risk management plan should be implemented to eliminate any concentrated water ingress at the site that may trigger sinkhole and/or doline formation. 	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor Operator 	<ul style="list-style-type: none"> Construction phase Operational phase

Table 6-5 – Soil, land use and land capability: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.4 SOIL, LAND USE AND LAND CAPABILITY			
Impact Management Outcome: <ul style="list-style-type: none"> Prevent soil degradation Reduce soil loss Prevent soil erosion Prevent soil contamination Minimise land use change Prevent loss in soil agricultural potential and land capability 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records; Spill response plan; Waste manifests and safety disposal certificates (all waste streams); Emergency preparedness and response procedure; Incident classification and incident investigation procedure (to be developed); and Monitoring and audit reports. 			
	Limit the extent of soil disturbance to the approved project infrastructural units.	Project Manager	

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Land capability, soil quality and health	Ensure that erosion control measures are implemented to minimise potential soil loss, and sediment transport to downgradient wetland area.	<ul style="list-style-type: none"> Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Construction phase
	All wastewater, fuels, oils and hazardous substances must be stored and managed in a manner that prevents contamination of soils and groundwater.		
	Avoid / limit disturbance and construction traffic on adjacent land, to reduce potential soil compaction. If areas accidentally become disturbed, ensure that these areas are vegetated as soon as possible to minimise the potential for soil erosion.		
	Ensure that soil disturbance activities occur during the dry season, to limit to severity of potential soil erosion.		
Land use (soil availability), soil quality	Ensure that soil covering (paving and infrastructure) is limited to approved areas.	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	Construction phase
	Regarding accidental spills of chemicals and hydrocarbons, ensure that a spill response plan is in place. Ensure that potential spillage areas have appropriate berms / bunding to prevent possible spills from spreading. Ensure that personnel are trained in handling accidental spills.		
	Inspect condition of newly constructed containment (bundling) infrastructure prior to installation of the new diesel tank. Ensure that a leakage detection system is installed / or similar system to alert operations in the event of a leak. Regularly inspect the tank and bunding for spillages / leaks.		
Soil quality	Ensure that a spill response plan (including spill kits) is in place. Ensure that potential spillage areas have appropriate berms / bunding to prevent possible spills from spreading.	<ul style="list-style-type: none"> Operator Environmental Manager 	<ul style="list-style-type: none"> Operational phase
	Ensure that personnel are trained in handling accidental spills.		
	Regularly inspect tanks and bunding for spillages / leaks. Ensure that tanks have a leak detection system in place.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Ensure that a spill response plan is in place. Ensure that potential spillage areas have appropriate berms / bunding to prevent possible spills from spreading.		
	All wastewater, fuels, oils and hazardous substances must be stored and managed in a manner that prevents contamination of soils and groundwater.		
	Ensure appropriate disposal of hydrocarbon residue in emptied tanks , and correct disposal of tanks during decommissioning (i.e., appoint suitable hazardous waste handling contractors to dispose of waste appropriately).		<ul style="list-style-type: none"> Decommissioning phase

Table 6-6 – Groundwater: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.5 GROUNDWATER			
Impact Management Outcome: <ul style="list-style-type: none"> Prevent contamination of groundwater resources. Prevent impacts on groundwater flow. Prevent impacts on groundwater users in terms of volume and quality. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records; Storm water management plan; Spill response plan; Waste manifests and safety disposal certificates (all waste streams); Emergency preparedness and response procedure; Incident classification and incident investigation procedure (to be developed); and Monitoring and audit reports. 			
Groundwater quantity	<ul style="list-style-type: none"> Implement effective stormwater systems to prevent concentrated ingress of water. 	<ul style="list-style-type: none"> Project Manager Environmental Manager 	<ul style="list-style-type: none"> Construction and operational phase
	<ul style="list-style-type: none"> Prevent extensive abstraction of groundwater. 		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Groundwater quality	Implement lined and roofed storage facilities as per engineering designs.	<ul style="list-style-type: none"> ECO Contractor Operator 	
	Prevent and control surface runoff in case of spillage or leakage of waste storage facilities.		
	Implement the storm water management plan for the WWTP. Storm water infrastructure should be designed and maintained to prevent erosion, sedimentation and the discharge of polluted runoff into surrounding natural areas.		
	<ul style="list-style-type: none"> Control any localised spillage, such as hydrocarbons, from earthworks machines. 		

Table 6-7 – Terrestrial Biodiversity: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.6 TERRESTRIAL BIODIVERSITY			
Impact Management Outcome: <ul style="list-style-type: none"> Minimise disturbance of the natural environment. Protect indigenous flora and fauna. Prevent spread of Alien Invasive Plant species. Rehabilitation plan. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records; Audits and monitoring reports; Waste management protocol; Alien and invasive species management plan; Incident classification and investigation procedure; and Environmental awareness programme/toolbox talks. 			
	<ul style="list-style-type: none"> Avoid undisturbed areas, to the extent possible. 	<ul style="list-style-type: none"> Project Manager 	

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Vegetation clearing at the WWTP	<ul style="list-style-type: none"> Indigenous vegetation clearing should be restricted to the proposed project footprints only, with no clearing permitted outside of these areas. 	<ul style="list-style-type: none"> Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Construction phase
	<ul style="list-style-type: none"> Install erosion prevention measures prior to the onset of construction activities. Measures should include sediment barriers along the lower edge of bare soil areas, and re-vegetation of disturbed areas as soon as possible. 		
	<ul style="list-style-type: none"> Ensure that all waste material is removed. 		
	<ul style="list-style-type: none"> All disturbed areas are to be rehabilitated and reseeded where necessary. 		
	<ul style="list-style-type: none"> Where possible, high rainfall periods (usually November to March) should be avoided during the construction phase to avoid increased surface runoff leading to erosion that may modify the remaining habitat on site. 		
	<ul style="list-style-type: none"> An effective rehabilitation plan must be designed and implemented, ensuring that all residual environmental impacts are addressed. 		
Faunal mortality	<ul style="list-style-type: none"> A record of fauna mortalities/injury due to interactions with Project infrastructure/activities should be kept on site and regularly reviewed to inform the need for implementation of any additional mitigation measures. 	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor Operator 	<ul style="list-style-type: none"> Construction phase Operational phase
	<ul style="list-style-type: none"> It is recommended that a speed limit of 40 km/h is implemented on all roads running through the study area to minimise risk to fauna from construction vehicles. 		
Spread of Alien Invasive Plant species	<ul style="list-style-type: none"> Existing stands of alien and invasive species should be removed from the project area prior to commencement of construction. 	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor Operator 	<ul style="list-style-type: none"> Construction phase Operational phase Decommissioning phase
	<ul style="list-style-type: none"> An alien and invasive species management plan should be developed for the project, which includes details of strategies and procedures that must be implemented on site to control the spread of alien and invasive species. A combined approach using both chemical and mechanical control methods, with periodic follow up treatments informed by regular monitoring, is recommended. 		
	<ul style="list-style-type: none"> All declared alien invasive plants species must be identified and managed throughout the project lifecycle and continuing thereafter 		

Table 6-8 – Social: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.7 SOCIAL			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To ensure that the negative socio-economic impacts are mitigated and managed. ■ To ensure that the positive socio-economic impacts are enhanced. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ Induction training and records. ■ Health, safety, environmental and community incident and complaints management system register. ■ Monitoring and audit reports. ■ Employment records and community engagement local enterprise development records. 			
Job creation	<ul style="list-style-type: none"> ■ Where reasonable and practical, the Project should apply a 'locals first' policy, especially for semi and un-skilled jobs. 	<ul style="list-style-type: none"> ■ Project Manager ■ Environmental Manager ■ ECO ■ Contractor 	<ul style="list-style-type: none"> ■ Construction phase
	<ul style="list-style-type: none"> ■ Local communities should be given special consideration regarding the benefits arising from the Project, as they will be most affected. 		
	<ul style="list-style-type: none"> ■ The engineering, procurement, and construction contractor should prefer appropriate subcontractors in the surrounding communities, followed by those in the municipal area and then those outside the province. 		
	<ul style="list-style-type: none"> ■ Resources required during construction should be sourced preferably from local businesses. Accommodation needed for contractors should favour local guesthouses and hotel. 		
Job creation	<ul style="list-style-type: none"> ■ Wherever possible, the hiring process should promote gender equality and women's employment. 	<ul style="list-style-type: none"> ■ Project Manager ■ Environmental Manager ■ ECO ■ Contractor 	<ul style="list-style-type: none"> ■ Construction phase
	<ul style="list-style-type: none"> ■ Liaise with the municipality regarding establishing a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies, etc.) before the commencement of the tender 		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.		
Population influx	<ul style="list-style-type: none"> Use existing community awareness / engagement fora with surrounding communities to provide information on the employment opportunities associated with the project, including the procurement process, and to sensitise community members to the risks associated with the project, including infectious disease awareness, and the grievance mechanism for communities to lodge complaints. If not already included as part of onboarding workers, training should be provided on preventing GBV, Sexual Assault (SEA) and Sexual Harassment (SH). Local employment should be a priority for the construction contractor to lessen the number of workers away from their homes. Provide training relevant to the proposed construction activities as part of existing training programmes offered by McCain, to enable local participants to take advantage of employment opportunities. 		
Population influx	<ul style="list-style-type: none"> No recruitment should occur at the Project gate to prevent informal settlements around the Project site. Increased security in the Project area should be provided to regulate access to the site and prevent establishment of informal settlements. 	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	Construction phase
Procurement from local businesses	<ul style="list-style-type: none"> Partner with local suppliers through procurement programmes to develop local suppliers. Procurement programmes should prioritise local procurement for locally available goods and services. 		
Community, health, safety and security	<ul style="list-style-type: none"> Employ security personnel on site during construction. Include monthly health talks and coordinate health and safety campaigns to educate personnel on general health, safety and security issues. 		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	<ul style="list-style-type: none"> Implement an HIV/AIDS and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. 		
	<ul style="list-style-type: none"> Transport workers to and from the site daily. 		
	<ul style="list-style-type: none"> Supervise and manage the entrance and exit of the construction site to ensure no interaction with communities at the site. 		
	<ul style="list-style-type: none"> No construction workers, except security personnel, should be permitted to stay overnight on the site. 		
Job creation	<ul style="list-style-type: none"> Preference should be given to appropriate subcontractors in the surrounding communities, followed by those in the municipal area and then those outside the province. 	<ul style="list-style-type: none"> Operator Environmental Manager 	<ul style="list-style-type: none"> Operational phase
	<ul style="list-style-type: none"> Resources required during operations should be sourced preferably from local businesses. Accommodation needed for contractors should favour local guesthouses and hotels. 		
	<ul style="list-style-type: none"> Wherever possible, the hiring process should promote gender equality and women's employment. 		

Table 6-9 – Heritage and Palaeontology: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
6.8 HERITAGE AND PALAENTOLOGY			
Impact Management Outcome: <ul style="list-style-type: none"> Ensure protection of fossils / heritage resources. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Environmental, and external incident and complaints management system register; Chance finds procedure; 			

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
<ul style="list-style-type: none"> Incident classification and incident investigation; and Monitoring and audit reports. 			
Construction of the WWTP	Implement the chance finds procedure should any fossils or other heritage resources be identified during excavations (as below).	<ul style="list-style-type: none"> Project Manager Environmental Manager ECO Contractor 	<ul style="list-style-type: none"> Construction phase
	If any archaeological or cultural heritage resources are encountered on site during excavation/construction, all work in the vicinity of the find must stop immediately to prevent further disturbance. A heritage specialist should be called to investigate the finds and to advise further. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, SAHRA should be contacted and a Phase 2 rescue operation may be required subject to permits issued by SAHRA. The same procedure must be applied should any human burials be uncovered, during any excavations.		
	If fossils are found once excavations for foundations and infrastructure have commenced, the fossils should be rescued, and a palaeontologist called to assess and collect a representative sample.		
	Photographs of similar fossils must be readily available to assist in recognising the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the training and awareness plan and procedures.		
	When excavations begin removed material must be inspected. Any fossiliferous material (trace fossils such as stromatolites or microbialites, plants, insects, bone or coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted.		
	Photographs of the putative fossils can be sent to a palaeontologist for a preliminary assessment. If there is any possible fossil material found by the developer/environmental officer then a qualified palaeontologist should visit the site to inspect the selected material.		
	Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	suitable institution where they can be made available for further study. Before the fossils are removed from the site, a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.		
	If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils. If no fossils are found and the excavations have been completed, then no further monitoring is required.		

7 CONCLUSION

The BA process considered the biological and physical location of the proposed project through the specialist studies conducted. It is therefore the opinion of the EAP that provided this project is mitigated, as per the mitigation and management measures outlined in this EMPr, the project will result in impacts that should not negatively impact the environment. It is the applicant's responsibility to ensure that this EMPr is made binding on the contractor by including the EMPr in the contract documentation. The contractor must thoroughly familiarise himself with the requirements of the EMPr and appoint an EM to oversee the implementation of the EMPr on a day-to-day basis. In addition, the applicant must appoint an external independent ECO to undertake monthly compliance audits during construction against the requirements of the EMPr as well as the EA.

Parties responsible for the transgression of this EMPr must be held responsible for any corrective actions that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour/negligence must receive penalties.

WSP is of the opinion that the project can proceed, provided that the outlined mitigation measures of the BA process and this EMPr are implemented effectively.

In terms of NEMA, everyone (i.e. all persons engaging in any component of this project) is required to take reasonable measures to ensure that they do not pollute the environment. 'Reasonable measures' includes informing and educating employees about the environmental risks associated with their work and training them to operate in an environmentally responsible manner.

Appendix A

EAP CV





Olivia Allen

Director: Environmental Planning & Advisory

CAREER SUMMARY

Olivia Allen has 20 years' experience in the discipline of Environmental Sciences. Olivia specialises in environmental assessment, regulatory compliance, waste planning and integrated project management.

As a senior consultant, Olivia has successfully led, or been part of, various projects in the mining sector of coal, gold, diamonds, copper and platinum; the petroleum sector of gas extraction; and steel, ferrochrome and electrolytic manganese dioxide industrial sectors. She has extensive experience in projects related to water management; waste management; contaminated land remediation; and decommissioning, rehabilitation and closure.

In the past, Olivia has functioned in various roles within the technical stream, including report writing; leading projects and proposal submissions; project management; project co-ordination; and working closely with engineering teams, environmental specialists, project feasibility teams, regulatory authorities, and stakeholders, to ensure successful project integration and sustainable development outcomes.



17 years with WSP

Area of expertise

Conducting Environmental Impact Assessments and compiling Environmental Management Plans

Development of Integrated Waste Management Plans

Compiling Water Use and Waste Management Licence Applications

Stakeholder engagement, including Regulatory Authorities

Co-ordination of Integrated Regulatory Processes

Environmental Compliance Assessment and Auditing

20 years of experience

Language

English – Fluent

Afrikaans - Fluent



EDUCATION

M.Sc Water Resource Management, University of Pretoria	2014
B.Sc Hons (cum laude) Geography, University of the Free State, South Africa	2003
B.Sc (cum laude) Zoology and Geography, University of the Free State, South Africa	2002

PROFESSIONAL MEMBERSHIPS

Environmental Assessment Practitioner Association South Africa (EAPASA) 2019/1725	2019 - present
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PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd.	July 2022 - present
Golder Associates Africa (Pty) Ltd.	July 2008 – June 2022
Clean Stream Environmental Services	June 2005 – June 2008

PROFESSIONAL EXPERIENCE

Due Diligence and Asset Acquisition

- Mogale Tailings Retreatment (Pty) Ltd, Phase 1 and 2 Environmental and Social Due Diligence, Gauteng
- ENSAfrica, Development of an Environmental Action List and Associated Costing for Evraz Highveld Steel and Vanadium Limited, Mpumalanga
- Universal Coal, Phase 1 Environmental Due Diligence for Exxaro Resources Limited New Clydesdale Colliery, Mpumalanga
- Total, Project Star - Environmental Due Diligence
- South32, Environmental Legal and Duty of Care Compliance Assessments for Wolvekrans, Ifa lethu, Klipspruit and Khutala Collieries, Mpumalanga
- Jet Demolition, Project Odyssey, Enviro-legal Assessment

Feasibility Studies – Environmental and Social Risk

- Ivanhoe Mines SA (Platreef Resources), Waste, Environmental & Permitting Related Inputs into Platreef BFS, Limpopo
- Debswana, Safety and Sustainable Development Inputs into PFS for Cut 9 Jwaneng Mine, Botswana
- Debswana, Safety and Sustainable Development Inputs into PFS for Cut 3 at Orapa Mine, Botswana
- South32, Environmental Risk & Permitting Related Inputs into Closure PFS for Rietspruit Colliery, Mpumalanga
- New Largo Coal, Environmental and Social Risk & Permitting Related Inputs into Pit H BFS, Mpumalanga
- New Largo Coal, Environmental and Social Risk & Permitting Related Inputs into Main Mine BFS, Mpumalanga
- Mafube Coal, Environmental and Social Risk & Permitting Related Inputs into PFS for Mafube Debottleneck Project, Mpumalanga
- Thungela Resources, Environmental and Social & Permitting Related Inputs PFS for into Greenside 3A North Project, Mpumalanga
- Klipspruit Colliery, Environmental and Social Risk & Permitting Related Inputs into BFS for Converting from Opencast to Underground at Pit BD, Mpumalanga

- Khutala Colliery, Environmental and Social Risk & Permitting Related Inputs into BFS for two projects:
- 5 Seam Plant Re-commissioning & Converting from Opencast to Underground at Central Eastern Extension, Mpumalanga

Oil & Gas

- Shell Exploration Company B.V., South Western Karoo Basin Gas Exploration Project, Northern, Western and Eastern Cape
- Bundu Gas and Oil Exploration, Review (and Update) of EMP for Gas Exploration, Eastern Cape
- TotalEnergies, Block 11B/12B Industrial and Social Baseline Studies, Western Cape
- Shell Downstream, Applications for Section 24G Rectification for various sites in KZN, Gauteng
- TotalEnergies, Block 11B/12B ESIA, Western Cape

Mine Water Treatment

- Anglo Operations Limited, eMalahleni Mine Water Reclamation Expansion Project, Mpumalanga
- Western Utilities Corporation, Mine Water Reclamation Project, Gauteng
- Anglo Operations Limited, New Denmark Colliery Reverse Osmosis Reject Pond, Mpumalanga
- Glencore, Tweefontein Mine Water Reclamation Plant, Mpumalanga
- Optimum Coal, Eikeboom Colliery Mine Water Reclamation Plant, Mpumalanga
- Anglo American Inyosi Coal, Development of a closure water management strategy for Kriel Colliery, Mpumalanga

Closure & Decommissioning

- Exxaro Resources Limited, Inyanda Coal Closure EMP, Mpumalanga
- Delta (E.M.D.), Closure Liability Assessment, Integrated Waste Management Plan & Integrated Regulatory
- Process for Electrolytic Manganese Dioxide Manufacturing Facility, Mpumalanga
- Exxaro Resources Limited, Arnot Coal Closure EMP, Mpumalanga
- Kangra Coal, Integrated Regulatory Process for closure of 2 sections of the mine
- Anglo American Inyosi Coal, Compliance Assessment of Closure Kriel Colliery's Rehabilitation Commitments, Mpumalanga
- South32, Development of an Integrated Remediation and Rehabilitation Plan for Metalloys, Gauteng
- South32, Review and Update of the Closure Costs and Integrated Rehabilitation and Remediation Plan for the Unscheduled and Scheduled Closure Scenarios for Metalloys, Gauteng
- Liberty Trust Rehabilitation Fund, Trustee

Other EIA's and EMP's

- Lonmin, Prospecting EMP Amendment for Akanani Mine, Limpopo
- Zululand Anthracite Colliery, EIA & EMP for new shaft developments, Kwa-Zulu Natal
- Exxaro Resources Limited, EIA & EMP for new pit development at Tshikondeni Coal Mine, Limpopo • Anglo Operations Limited, EIA & EMP for new pit development and mine water reclamation plant at Mafube Colliery, Mpumalanga
- Exxaro Resources Limited, EIA & EMP for new pit development at Leeuwpan Coal, Mpumalanga
- Blyvoor Gold Operations (Pty) Ltd, EMP Update, WULA for tailings reclamation and underground mining at Blyvooruizicht Gold Mine, Gauteng
- South32, Application for environmental authorisation for indigenous vegetation removal at Metalloys, Gauteng

- Glencore, Application for environmental authorisation for dewatering pipeline for Goedgevonden Colliery, Mpumalanga
- Mafube Coal, Application for EMP amendment for in-pit crusher at Mafube Colliery, Mpumalanga
- New Largo Coal, Application for EMP amendment for Pits D & H, Mpumalanga
- Sopel, ESIA for the By-pass Toll Road, Kolwezi, DRC
- New Largo Coal, Application for EMP amendment for Pit F, Mpumalanga

Waste Management Planning

- Eskom Holdings, Industry Waste Management Plan for Eskom's Power-generating Units, South Africa
- Ivanhoe Mines SA, Integrated Waste Management Plan for underground Platreef platinum mine, Limpopo
- Exxaro Resources Limited, Integrated Waste Management Plan for Mayoko iron ore mining project, Republic of Congo
- Debswana, Integrated Waste Management Plan for Jwaneng Mine, Botswana
- Debswana, Integrated Waste Management Plan Update for Orapa, Letlhakane and Damtshaa Mines, Botswana
- Tubatse Ferrochrome, Development of Waste Removal, Processing and Management Plan for nine historic waste sites, and site-wide Integrated Waste Management Plan, Limpopo
- Wasteman, Waste Impact Report for Bulbul Landfill, Kwa-Zulu Natal
- Palabora Mining Company, Integrated Waste Management Plan, Limpopo
- ASA Metals, Waste Impact Report for Dilokong Chrome Mine, Limpopo

Waste Licence Applications

- Sasol, Waste Licence Application for proposed Vanadium Disposal Facility, Mpumalanga
- Tubatse Ferrochrome, Waste Licence Application for decommissioning historic slag dump, Limpopo
- Ivanhoe Mines SA (Platreef Resources), Waste Licence Application for underground Platreef platinum mine, Limpopo
- Rustenburg Municipality, Waste Licence Application for Waterval Landfill Site, North West
- Evraz Highveld Steel and Vanadium Limited, Waste Licence Application for Steelworks, Mpumalanga
- Evraz Highveld Steel and Vanadium Limited, Waste Licence Application for decommissioning of Calcine Waste Disposal Facility, Mpumalanga
- Palabora Mining Company, Waste Licence Application for Palabora Mining Company site, Limpopo
- Anglo Operations Limited, Waste Licence Application for new mine & mine water reclamation plant New Vaal Colliery, Gauteng/Free State
- Glencore, Waste Licence Application for Zonnebloem Coal Mine, Mpumalanga
- Anglo Operations Limited, Waste Licence Application for new pit development and mine water reclamation plant at Mafube Colliery, Mpumalanga
- Africary Holdings, Waste Licence Application for Underground Coal Gasification (UCG) project, Free State
- South32, Waste Licence Application for the decommissioning of dormant waste facilities at Metalloys, Gauteng
- South32, Waste Licence Application for discard dump extension at Klipspruit Colliery, Mpumalanga
- Anglo, Waste Licence Application for discard dump at Zibulo Colliery, Mpumalanga

Exemption Applications

- Eskom Holdings, Application for Exemption of Waste Management Activity and Ash Beneficiation in terms of NEMWA, South Africa

Compliance Assessments & Audits

- New Clydesdale Coal, EMP Performance Assessment, Mpumalanga
- Zululand Anthracite Colliery, Various Compliance Audits, Kwa-Zulu Natal
- Glencore, External Waste Management Licence Audit at Wonderkop Smelter, North West
- Goldplat Recovery, High-level enviro-legal assessment and development of compliance strategy, Gauteng
- GoodRock Chemworks, Confirming the regulatory path for obtaining environmental authorisation for the calciner plant, Northern Cape
- Randlord, High-level enviro-legal assessment for tailings storage facilities earmarked for reworking and/or rehabilitation, Gauteng
- Scaw South Africa, Identification of NEMA listed activities associated with decommissioning of Scaw Standard Foundry, Gauteng
- SA Lime & Gypsum Group, Enviro-legal assessment for the reworking of tailings and waste rock at Witkop Fluorspar Mine, North West
- South32, Environmental Legal Gap Analysis for Middelburg Colliery & Coal Processing, Mpumalanga
- Grindrod Terminals, Enviro-legal gap analysis, KZN

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Kruger, E. and Chapman, O. A., 2005: Quality Aspects of Environmental Impact Assessment Reports in the Free State Province, South Africa. South African Geographical Journal, 87 (1), 52-57

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Kruger, E. and Chapman, O. A., 2005: Quality Aspects of Environmental Impact Assessment Reports in the Free State Province, South Africa. South African Geographical Journal, 87 (1), 52-57

**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2019/1725

Herewith certifies that

OLIVIA ALLEN

is registered as an

Environmental Assessment Practitioner

**Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).**

Effective: 01 March 2025

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