



McCain Foods Pty Ltd

DRAFT BASIC ASSESSMENT REPORT

MCCAIN DELMAS PROPOSED WASTEWATER TREATMENT PLANT AND EXPANSION OF DIESEL STORAGE





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EXECUTIVE SUMMARY

PROJECT BACKGROUND

McCain Foods (Pty) Ltd (McCain) proposes to construct a wastewater treatment plant (WWTP) and expand diesel storage at their Delmas Plant, located within the Victor Khanye Local Municipality in the Mpumalanga Province. The proposed activities require an application for environmental authorisation (EA) in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (NEMA), supported by a basic assessment (BA) process in terms of the Environmental Impact Assessment (EIA) Regulations (2014, as amended). The competent authority (CA) for the EA application is the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA). WSP Group Africa (Pty) Ltd (WSP) has been appointed by McCain to undertake the required BA process.

This BA Report has been prepared as part of the BA process. An application for EA for the proposed WWTP and expansion of diesel storage at the McCain Delmas Plant was submitted to MDARDLEA on 02 June 2026 and acknowledged on 05 June 2026. The Draft BAR was made available for a 30-day public participation process from 16 July 2026 to 18 August 2026, during which comments were received from Interested and Affected Parties (I&APs) and commenting authorities, including the Mpumalanga Tourism and Parks Agency (MTPA) and the South African Heritage Resources Agency (SAHRA).

Following completion of the public participation process, the EA application lapsed before the submission of the Final BAR to MDARDLEA. As a result, the EA application is being resubmitted. In accordance with the requirements of the Environmental Impact Assessment Regulations, 2014 (as amended), the public participation process has to be redone, including a new 30-day public review period, stakeholder notification, newspaper advertisement, site notice placement and updating of the stakeholder database. The outcomes of the resubmission public participation process will be incorporated into the Final BAR.

PURPOSE OF THE BASIC ASSESSMENT REPORT

This report outlines the BA process that has been followed to assess the potential negative and positive impacts of the proposed project. The BA process is an interdisciplinary procedure to ensure that environmental and social considerations are included in decisions regarding projects. Simply defined, the process aims to identify the possible environmental and social effects of a proposed activity and how those impacts can be mitigated. This report seeks to provide the CA with sufficient information to make an informed decision on the granting or refusing the EA applied for.

PROJECT LOCATION

The proposed developments will take place within the existing operational area of the McCain Delmas Plant, located on Portion 5 of Farm Leeuwpoort 205 IR. The site is accessible via the R42, with a turn into Harrison Road leading directly to the proposed development area.

SUMMARY OF PROJECT COMPONENTS

McCain proposes to construct a proposed WWTP and install an additional diesel storage tank at their Delmas Plant.

Wastewater Treatment Plant

In line with McCain's strategy to making their food and agricultural systems more sustainable and resilient, the proposed WWTP will treat effluent that is generated from the manufacturing process. The plant will have a maximum treatment flowrate of 3 400 m³/day and will be located in the northeastern corner of the site, on McCain-owned property. The effluent will be treated to meet the quality requirements that would be suitable for discharge to municipal sewer or for plant use (potable water quality). Waste activated sludge from the treatment plant will be temporarily stored in hoppers on site and ultimately disposed offsite.

The plant will include an anaerobic digestion process 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 footprint for the facility will be approximately 9 000 m².

Diesel Tank

McCain cumulatively stores approximately 44 m³ of diesel in various tanks on site and proposes to install an additional 79 m³ diesel storage tank. The proposed diesel storage tank will be a self-bunded (double wall) containerised tank.

PROJECT ALTERNATIVES

Site Alternatives

The proposed project will be located within the current footprint of the McCain Delmas Plant facility. No site alternatives for the WWTP or the diesel storage expansion can be provided or considered, due to limited land availability within the facility's boundaries and the need to tie into existing infrastructure on site.

Technology Alternatives

Several technology alternatives for the WWTP were considered. For Primary treatment, two technology options have been identified as either Covered Anaerobic Lagoons or Upflow Anaerobic Sludge Blanket Reactors (UASB). UASB was selected as the preferred option since this technology requires less space, is energy efficient and can handle high organic loads. For phosphorous removal, use of iron/aluminium or use of specialised bacteria (biological) were considered; iron/aluminium was selected as preferred as it is deemed to be more effective than biological.

In terms of the activated sludge process, two technology options have been considered for the control of the mass of biomass in the treatment systems, namely gravity settling in a secondary clarifier and applying a Membrane Bioreactor (MBR). MBR was selected as the preferred option as it allows the system to operate at higher biomass concentrations, thereby making the system smaller. For the use of the biogas generated at the WWTP, two options have been considered; power generation (at the WWTP) or displacing coal in the McCain Delmas Plant's existing boilers. The latter option was selected as preferred due to environmental benefits that would be realised from reducing greenhouse gas emissions and air pollution at the McCain Delmas Plant.

No-go alternative

Should the “do-nothing” alternative be implemented, the benefits arising from the WWTP in terms of resource efficiency and reduced greenhouse gas emissions and air pollution will not materialise. Furthermore, business operations at the McCain Delmas facility may be negatively impacted due to a lack of fuel.

NEED AND DESIRABILITY

The project is centred on upgrading the WWTP and expanding the diesel storage capacity, with the objectives of maintaining production, and increasing operational efficiency and sustainability throughout the facility. These objectives align with:

- The McCain global sustainability strategy to run Resource-Efficient Operations, given that the project is associated with improved water use efficiency, ceasing use of coal, achieving reduction in Scope 1 and 2 emissions, and use of renewable energy.
- National Development Plan (2030), the Victor Khanye Local Municipality Integrated Development Plan and the Mpumalanga Provincial Growth and Development Strategy (PGDS) (2013-2030) in that the projects support sustainable operations by enabling water reuse and safeguarding resources, and reliable energy for food processing, which is vital for food security and uninterrupted local economic activity.

BASIC ASSESSMENT PROCESS

The basic assessment process has been conducted as follows:

- Environmental screening was undertaken to determine the scope of the impact assessment; the potential environmental sensitivities associated with the project site and based thereon the necessary specialist studies that need to be conducted.
- A preliminary Interested and Affected Party (I&AP) database has been developed for use in the public participation process.
- The following specialist studies have been completed:
 - Palaeontology Impact Assessment
 - Heritage Impact Assessment
 - Terrestrial Biodiversity Impact Assessment
 - Surface Water Assessment (Stormwater management plan)
 - Groundwater Impact Assessment
 - Geotechnical Assessment
 - Air Quality Impact Assessment
 - Acoustic Impact Assessment
 - Soil, land use and land capability Impact Assessment
 - Social Impact Assessment
- The BA Report (this report) was compiled, was made available for public comment and was updated to address the comments and/or issues raised by I&APs, including commenting authorities.
- Additional public participation activities were also undertaken, such as placement of a newspaper advertisement and site notices in public places in and around the McCain Delmas site. These activities will be repeated as part of the resubmission process.
- The final BA report will be submitted to the competent authority, MDARDLEA.

- Further engagement with regulatory authorities will continue to be undertaken.

SUMMARY OF BASELINE ENVIRONMENT

Physical Environment

The physical environment of the site is characterised by a summer-dominant rainfall pattern, with most precipitation falling between December and February, while winters are notably drier. Average summer temperatures are approximately 20.6°C, while winter averages are around 10.0°C. Wind patterns show predominant directions from the northwest, south, northeast, and west-northwest, with calm conditions present about 10% of the time. Wind speed averages 2.9 m/s, with occasional stronger gusts, and seasonal shifts in wind direction are observed.

Air quality monitoring near the McCain Delmas site reveals compliance with national ambient air quality standards for sulphur dioxide and carbon monoxide, with no significant exceedances recorded. Pollutant levels are generally low and within permissible limits. Noise surveys at six off-site locations indicate that daytime noise is mostly traffic-related, with occasional exceedances at one site. Night-time noise levels exceed typical urban guidelines at all monitored locations, influenced by traffic and industrial activities.

Geologically, the site is underlain by the Rooihooft Chert Formation atop dolomite of the Malmani Subgroup, with secondary features including fractured and weathered diabase dykes. Surface soils are a mix of fill material and high-capability Hutton soils, though the area is too limited for commercial cropping. The main surface water drainage system is the Bronkhorstspuit running in a southwest-northeast direction about 2.8 km east of the site area.

Groundwater studies show a dolomite aquifer system capped by chert, with significant borehole yields and good hydraulic connectivity. Recent hydrocensus data indicate a drop in groundwater levels, likely due to cumulative regional abstraction. However, water quality remains high (Class 0, ideal for drinking). Aquifer vulnerability is considered high due to the geological setting, necessitating ongoing management measures.

Biological Environment

The project area does not overlap with Priority Focus Areas for protected area expansion, Critical Biodiversity Areas, Ecological Support Areas, nationally Protected Areas, or Key Biodiversity Areas. The footprint associated with the proposed WWTW is largely dominated by alien invasive plants with little to no indigenous vegetation. The central and eastern portions of the WWTW footprint have been cleared of vegetation due to construction activities. The diesel tank storage area is completely transformed with no natural vegetation remaining.

The project area does not support vegetation typical of the Endangered Eastern Highveld Grassland; no plant species of conservation concern were confirmed during field verification and habitat within the study area is of low to very low sensitivity for supporting plant species of conservation concern. Habitat fragmentation and security walls limit fauna movement and reduce habitat corridors and refugia. Disturbed wooded grassland patches support nesting birds, but no avifauna species of conservation concern were recorded during field verification.

No mammals or herpetofauna (reptiles/amphibians) were observed during field verification, likely due to habitat isolation and disturbance. Screening tools flagged three potential mammalian species of conservation concern, but none were confirmed or observed in the site survey. The is potential

presence of White Bellied Bustard (Vulnerable nationally) on the site, but suitable habitat is absent, and the species was not observed during site verification.

Social Environment

The project site is located in the Victor Khanye Local Municipality, which has a balanced gender distribution, with a slight male majority, and a predominantly young population. The Local Municipality shows a gradually improving educational profile and boasts a relatively high school attendance rate. The unemployment rate of the Local Municipality is around 31.4% and significantly contributes to the District Municipality's key industries, with agriculture accounting for 21.6% and transport contributing 12.3%.

McCain Delmas currently employs around 400 permanent staff with approximately 100 temporary employees. McCain Delmas Plant is surrounded by farmlands and factories. Farmland with crop fields is located on the northern side of the McCain property while industrial facilities are located on the southern side. Some of the industrial facilities include FLSmidth Delmas Super Centre, Q4 Fuel Delmas and VKB. Botleng, Delpark and Delmas West residential areas are located within 3 km of the McCain Delmas Plant.

From a heritage perspective, no Stone Age archaeological sites are located near the study area. There are also no known Early or Middle Iron Age sites in the immediate vicinity, though some Later Iron Age stone-walled sites exist in the broader region. The town of Delmas, established in 1907 on the farm Witklip, expanded over time through government land additions. Nearby townships include Bothibelong, meaning 'protection', and Botleng, meaning 'place of beauty', both derived from Sotho. No historically significant sites, features, or materials were found or documented within the study area itself during field verification.

Although the proposed project site lies on the potentially very highly sensitive dolomites of the Malmani Subgroup (Transvaal Supergroup) that might preserve trace fossils such as stromatolites and microbialites (organo-sedimentary structures formed by microbial communities), no fossils were observed during field verification.

KEY POTENTIAL IMPACTS IDENTIFIED

Air Quality

With the inclusion of the biogas engine, aeration basin and the diesel tank, predicted concentrations for all air quality pollutants are unlikely to significantly affect the surrounding environment. Peak concentrations across all pollutants (PM10 and PM2.5, CO, SO2, NO2, TVOC represented by benzene, NH3, H2S and Odour) occur either within the operational boundary or adjacent to the facility's fenceline. Without mitigation, the risks for the project are considered Low, with moderate magnitude, limited extent, and partial reversibility over the medium term. With mitigation measures in place, both the magnitude and likelihood of occurrence are reduced, resulting in a Very Low residual risk.

Noise

During the construction phase of the project, various noise sources may be present on site, including earth-moving equipment (trucks, cranes, scrapers and loaders), compressors and generators, pumps, rotary drills, concrete mixers and materials handling activities, among others. All these sources will generate substantial amounts of noise and may impact on neighbouring sensitive receptors. During

the operational phase, the highest noise levels are predicted around the WWTP and Hammermill area, as these areas contain the noisiest sources.

Daytime noise levels at all receptor locations are predicted to increase by between 0.0 and 0.7 dB(A) with the operation of the project, resulting in “little” community/group response. Night-time noise levels at all the receptor locations are predicted to increase by between 0.0 and 0.3 dB(A), also resulting in “little” community/group response. It is noted that such increases at these locations (during both day and night) are well below the 5 dB(A) threshold for annoyance as per the Nkangala District Municipality Air Quality Management By-Law and as such, these increases are likely to go unnoticed. Based on both the day and night-time results presented here, acoustic impacts of the operation of the proposed project are Low and noise-related complaints from receptors are not anticipated.

Geotechnical and dolomite stability

Should the proposed project activities result in concentrated ingress of water or extensive abstraction of groundwater, this could increase the likelihood of occurrence of sinkholes, especially in the WWTP footprint area. It is recommended that a site-specific Dolomite risk management plan be implemented to eliminate any concentrated water ingress at the site that may trigger sinkhole and/or doline formation.

Soil, land use and land capability

The key anticipated impacts on the soil, land capability and land use due to the project activities mainly affect soil quality, soil quantity, land use, and land capability and are anticipated to be of Moderate significance. However, with the implementation of appropriate mitigation measures the significance of the impacts can be reduced to Low.

Groundwater

Although the WWTP and associated facilities and diesel storage tank are designed to prevent any seepage or leakage from the waste/wastewater to groundwater and to the environment, accidental spillages or leakages could occur causing localised contamination of the groundwater. Should water supply for construction be sourced from the on-site boreholes, excessive abstraction could result in lowering of water levels which in turn could impact on surrounding groundwater users and increase the risk of subsidence and sinkhole formation within the karst formation. This impact has a very low probability of occurrence given the short duration of the construction phase and low volumes of water anticipated to be required for construction.

Terrestrial biodiversity

Due to its transformed and degraded habitat and lack of very high sensitivity features, the study area is of a low sensitivity for terrestrial ecosystems, plants and animals. The proposed development will not have a significant impact on sensitive terrestrial ecosystems.

Social

The study findings show that the project will potentially positively impact the community, including employment and economic benefits, especially should the recommended enhancement measures be implemented. With these enhancement measures, some of the positive impacts can be increased to Moderate. The potential negative impacts include influx of job seekers, loss to agricultural land, impacts on groundwater users, impacts on community health, safety and security and impacts on air quality and noise, but all identified impacts can be mitigated to Low or Very Low.

Heritage

The literature review indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, but none in the specific development area footprint. No Stone Age, Iron Age or Historical Age sites, features or material were identified in the study and proposed development area during the field-based assessment. The only remains recorded were very recent and constructed by McCain Delmas in the area. These included the remains of braai facilities, as well as a parking area. The impact of the proposed development on cultural heritage in the area is deemed to be Very Low.

Palaeontology

Based on the site visit observations and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying soils of the Quaternary. Outcrops of the same formation in other parts of the country have trace fossils so there is a chance that they also occur in this area. The site visit and walk through, however, confirmed that there were no fossils in the project footprint. The impact on the palaeontological heritage would be Low pre-mitigation and Very Low post-mitigation.

CONCLUSION AND AUTHORISATION OPINION

Considering the findings of the respective studies, no fatal flaws were identified for the proposed project. Should the avoidance and mitigation measures prescribed be implemented, the significance of the considered impacts for all negative aspects pertaining to the environmental aspects is expected to be Low to Very Low. It is thus the opinion of the EAP that the project can proceed and that all the prescribed mitigation measures and recommendations are considered by the issuing authority.

WAY FORWARD AND NEXT STEPS

The draft Basic Assessment Report and EMP_r will be made available for a further 30-day public review period. Any additional issues and comments submitted to WSP will be incorporated into the final Basic Assessment (this report) which will be submitted to the MDARDLEA for decision-making.

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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
BPEO	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

Acronym	Description
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
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

Acronym	Description
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
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.

1.1 PURPOSE OF THE REPORT

This report outlines the BA process that has been followed to assess the potential negative and positive impacts of the proposed project. The BA process is an interdisciplinary procedure to ensure that environmental and social considerations are included in decisions regarding projects. Simply defined, the process aims to identify the possible environmental and social effects of a proposed activity and how those impacts can be mitigated. This report seeks to provide the CA with sufficient information to make an informed decision on the granting or refusing the EA applied for.

1.2 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.

1.3 DETAILS OF KEY ROLE PLAYERS

1.3.1 PROJECT PROPONENT

McCain is the project proponent (Applicant) with regards to this application for construction and operation of the WWTP and additional diesel storage installation at the Delmas Plant. Table 1-1 provides the relevant details of the project proponent.

Table 1-1 – Details of Project Proponent

Proponent:	McCain Foods (Pty) Ltd
Contact Person:	Pumeza Nkala
Address	Harrison McCain Road Delmas, Mpumalanga 2210
Telephone:	+27 13 665 8600
Email:	pumeza.nkala@mccain.co.za

1.3.2 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.

1.3.3 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 Geosciences;
- Victor Khanye Local Municipality;
- Nkangala District Municipality; and
- Mpumalanga Tourism and Parks Agency.

1.3.4 ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP has been appointed as the Independent Environmental Assessment Practitioner (EAP) to undertake the BA process for the proposed project. The CV of the EAP and EAP's declaration of interest and undertaking are included in Appendix A.



Table 1-2 provides details the relevant contact details of the EAP.

Table 1-2 – 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 Qualifications:	<ul style="list-style-type: none">■ B.Sc. Zoology and Geography■ B.Sc. (Hons, Geography 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)

1.3.5 STATEMENT OF INDEPENDENCE

Neither WSP nor any of the authors of this Report have any material present or contingent interest in the outcome of this Report, nor do they have any business, financial, personal or other interest that could be reasonably regarded as being capable of affecting their independence. WSP has no beneficial interest in the outcome of the assessment. The EAP declaration of interest and undertaking is included in Appendix A.

1.3.6 SPECIALISTS

Specialist inputs were required in support of this EA application. The details of the Specialists are provided in Table 1-3 below. The Specialists' study reports are attached in Appendix D.

Table 1-3 – Details of Specialists

Assessment	Name of Specialist	Company	Sections in Report
Surface Water (Stormwater management plan)	Johan Jordan	WSP Group Africa (Pty) Ltd	Appendix D.1
Groundwater	Danie Brink	WSP Group Africa (Pty) Ltd	Appendix D.2
Air Quality	Yakeen Kowlas	WSP Group Africa (Pty) Ltd	Appendix D.3
Acoustics (Environmental Noise)	Kirsten Collet	WSP Group Africa (Pty) Ltd	Appendix D.4
Biodiversity	Rudolph Greffrath	WSP Group Africa (Pty) Ltd	Appendix D.5
Heritage	Anton Pelser	A. Pelser Archaeological Consulting	Appendix D.6
Palaeontology	Marion Bamford	Marion Bamford Consulting	Appendix D.7
Social	Stephen Horak	WSP Group Africa (Pty) Ltd	Appendix D.8
Soil, Land Capability and Agricultural Potential	Ilse Snyman	Soil Advisory Services (Pty) Ltd	Appendix D.9
Geotechnical and dolomite stability investigation	Gerrie van Jaarsveld and Ian Deale	Rockland Geoscience (Pty) Ltd	Appendix D.10

1.4 BASIC ASSESSMENT TERMS OF REFERENCE

The EIA Regulations identifies the project as an activity being subject to a BA Process due to the applicability of the EIA Listing Notices 1 and 3 published on 7 April 2017. In order for the project to proceed, it will require an EA from the MDARDLEA. As defined in Appendix 1 of the EIA Regulations, the objective of the BA process is to, through a consultative process:

- Determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- Identify the alternatives considered, including the activity, location, and technology alternatives;
- Describe the need and desirability of the proposed alternatives;
- Determine the nature, significance, consequence, extent, duration, and probability of the impacts; and the degree to which these impacts can be reversed, may cause irreplaceable loss of resources, and can be avoided, managed or mitigated; and

- Through a ranking of the site sensitivities and possible impacts:
 - Identify and motivate a preferred site, activity and technology alternative;
 - Identify suitable measures to avoid, manage or mitigate identified impacts; and
 - Identify residual risks that need to be managed and monitored.

A Public Participation Process (PPP) is a requirement of the BA process; it consists of a series of inclusive and culturally appropriate interactions aimed at providing stakeholders with opportunities to express their views, so that these can be considered and incorporated into the BA decision-making process. Effective public participation requires the prior disclosure of relevant and adequate project information to enable stakeholders to understand the risks, impacts, and opportunities associated with the project. The objectives of the public participation process can be summarised as follows:

- Identify relevant individuals, organisations and communities who may be interested in or affected by the project;
- Clearly outline the scope of the project, including the scale and nature of the existing and proposed activities;
- Identify viable project alternatives that will assist the relevant authorities in making an informed decision;
- Identify shortcomings and gaps in existing information;
- Identify key concerns, raised by stakeholders that should be addressed in the subsequent specialist studies;
- Highlight the potential for environmental impacts, whether positive or negative; and
- To inform and provide the public with information and an understanding of the project, issues and solutions.

1.5 BASIC ASSESSMENT REPORT STRUCTURE

Appendix 1 of the EIA Regulations identifies the legislated requirements that must be contained within a BA report (BAR) for the CA to consider and arrive at a decision on the application.

Table 1-4 below details where the required information is located within the BAR.

Table 1-4 - Legal Requirements as detailed in Appendix 1 of the EIA Regulations

Appendix 1 of GNR 326	Description	Relevant Report Section
3(1) (a)	Details of the EAP who prepared the report and the expertise of the EAP, including a curriculum vitae	Section 1.3.4 and Appendix A
3(1) (b)	The location of the activity	Section 3.1
3(1) (c)	A plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale	Section 3.1
3(1) (d)	A description of the scope of the proposed activity	Section 3
3(1) (e)	A description of the policy and legislative context within which the development is proposed	Section 5

Appendix 1 of GNR 326	Description	Relevant Report Section
3(1) (f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	Section 3.7
3(1) (g)	A motivation for the preferred site, activity and technology alternative	Section 4
3(1) (h)	A full description of the process followed to reach the proposed alternative within the site	Section 4
3(1) (i)	A full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity	Sections 2 & 8
3(1) (j)	An assessment of each identified potentially significant impact and risk	Section 8
3(1) (k)	Where applicable, a summary of the findings and impact management measures identified in any Specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report	Section 9, Section 10.1
3(1) (l)	An environmental impact statement	Section 9
3(1) (m)	Based on the assessment, and where applicable, impact management measures from Specialist reports, the recording of the proposed impact management objectives, and the impact management outcomes for the development for inclusion in the Environmental Management Programme (EMPr).	Section 9.5
3(1) (n)	Any aspects which were conditional to the findings of the assessment either by the EAP or Specialist which are to be included as conditions of authorisation.	Section 9.5
3(1) (o)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Section 2.8
3(1) (p)	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation	Section 10
3(1) (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be conducted, and the post-construction monitoring requirements finalised	Section 10.1
3(1) (r)	An undertaking under oath or affirmation by the EAP	Appendix A
3(1) (s)	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts	N/A

Appendix 1 of GNR 326	Description	Relevant Section	Report
3(1) (t)	Any specific information that may be required by the competent authority	N/A	
3(1) (u)	Any other matters required in terms of section 24(4)(a) and (b) of the Act	N/A	

2 BASIC ASSESSMENT PROCESS

2.1 ENVIRONMENTAL SCREENING

The EAP and specialist team for the project undertook a detailed desktop review of available information, which includes previous EIA reports, specialist assessments and monitoring data relevant to the project area. Furthermore, as part of the desktop assessment, a screening report was generated using the DFFE's National Web-based Environmental Screening Tool. Site sensitivity verification was undertaken by the EAP and relevant specialists, the findings of which are documented in the site sensitivity verification report included in Appendix C. The DFFE screening tool reports are also appended in Appendix C.

2.1.1 DFFE WEB-BASED SCREENING TOOL

The DFFE has developed the National Web-based Environmental Screening Tool to flag areas of potential environmental sensitivity related to a site as well as a development footprint and produces the Screening Report required in terms of Regulation 16 (1)(v) of the EIA Regulations. The Notice (GN 960 of July 2019) of the requirement to submit a report generated by the National Web-based Environmental Screening Tool in terms of Section 24(5)(h) of the NEMA and Regulation 16(1)(b)(v) of the EIA regulations states that, as of 04 October 2019, the submission of a report generated from the National Web-based Environmental Screening Tool is compulsory when submitting an application for EA in terms of Regulations 19 and 21 of the EIA Regulations.

The Screening Report generated by the National Web-based Environmental Screening Tool contains a summary of any development incentives, restrictions, exclusions or prohibitions that apply to the proposed development footprint as well as the most environmentally sensitive features on the footprint based on the footprint sensitivity screening results for the application classification that was selected.

The Screening Report also lists specialist assessments that should form part of an EA application process based on the development type and the environmental sensitivity of the site. The Screening Report recognises that *"it is the responsibility of the EAP to confirm this list and to motivate in the assessment report, the reason for not including any of the identified specialist study including the provision of photographic evidence of the footprint situation."*

Specialist studies conducted to meet the requirements of the Screening Report must comply with the Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Section 24(5) (a) and (h) and 44 of the NEMA, when applying for EA ("the Protocols") (Government Notice No. 320 as published in Government Gazette No. 43110 on 20 March 2020 – GN R.320). Such Procedures / Protocols have been developed for the following specialist themes:

- Agriculture – if sensitivity is deemed (by the Screening Tool) to be very high or high, a full assessment must be done; if deemed to be low or medium, a compliance statement will suffice. Note, a signed copy of the compliance statement must be appended to the BA or EIA Report.
- Avifauna – relevant onshore wind facility only.
- Biodiversity (terrestrial and aquatic) - if sensitivity is deemed (by the Screening Tool) to be very high or high, a full assessment must be done; if deemed to be low or medium, a compliance statement will suffice.
- Noise - if sensitivity is deemed (by the Screening Tool) to be very high or high, a full assessment must be done; if deemed to be low or medium, a compliance statement will suffice.
- Defence - if sensitivity is deemed (by the Screening Tool) to be very high, high or medium, a compliance statement must be done; if deemed to be low no further assessment is required.
- Civil aviation - if sensitivity is deemed (by the Screening Tool) to be very high, high or medium, a compliance statement must be done; if deemed to be low no further assessment is required.

Specialist studies for all other themes must comply with Appendix 6 of the EIA Regulations (2014, as amended).

A summary of the site environmental sensitivities as identified in the DFFE Screening Report for the project is presented in Table 2-1. Further, based on the selected classification and the potential impacts of the proposed development, specialist assessments were identified in the DFFE Screening Tool Report as also reflected in Table 2-1. Based on a site visit by the EAP and the specialist assessments that were conducted, the site sensitivities were verified and are also reflected in Table 2-1 and Section 7 and are discussed in detail in the Site Screening Verification Report attached in Appendix C.

Table 2-1 – Theme or specialists identified in the DFFE Screening Report and comments thereto

Specialist study in DFFE Screening Tool	Theme in DFFE Screening Tool	DFFE Screening Report Sensitivity	Specialist assessments or motivation if not commissioned	Theme Screening by EAP / Specialist (Section 7)	Detail of specialist
Agricultural Impact Assessment	Agricultural Theme	Very high	A Soil, Land Use and Land Capability Assessment was commissioned as undertaken by Soil Advisory Services.	Medium to Low	Ilse Snyman Soil Scientist SACNASP: 400282/14
Ambient Air Quality Impact Assessment	Not identified	N/A	An Air Quality Impact Assessment has been commissioned, as undertaken by WSP, given the nature of the proposed developments, and their locations in relation to proximity to sensitive receptors.	N/A	Yakeen Kowlas (WSP)
Animal Species Assessment	Animal Species Theme	Medium	Animal Species Compliance Statement (Included in the Terrestrial Biodiversity Compliance Statement) has been commissioned, as undertaken by WSP.	Low	Rudolph Greffrath (WSP) Pr.Sci.Nat. – 400017/18 (Ecological Science) Shavaughn Davis Pr.Sci.Nat. – 115025 (Zoological Science, Ecological Science)
Aquatic Biodiversity Impact Assessment	Aquatic Biodiversity Theme	Low	Due to the disturbed nature of the site, further as per the output of the DFFE screening tool (Low sensitivity), and the absence of watercourses or wetlands within the sites' proximity, no specialist's assessment was commissioned. A project specific Conceptual Storm Water Plan was commissioned to limit surface water runoff impacts.	Low	N/A

Specialist study in DFFE Screening Tool	Theme in DFFE Screening Tool	DFFE Screening Report Sensitivity	Specialist assessments or motivation if not commissioned	Theme Screening by EAP / Specialist (Section 7)	Detail of specialist
Archaeological and Cultural Heritage Impact Assessment	Archaeological and Cultural Heritage Theme	Low	A Phase 1 Heritage Impact Assessment was commissioned as undertaken by APAC Consulting.	Low	AJ Pelser Accredited member of ASAPA: Number 106
Not identified	Civil Aviation Theme	Low	The Delmas Airfield – FADE is a single-strip airfield (approximately 8 km from project location) suitable for small aircraft operations and it is not classified as a high-traffic or commercial aviation hub. The 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 m threshold that typically triggers aviation safety assessments under the Civil Aviation Authority (CAA) guidelines. Furthermore, none of the infrastructure will pose glint or glare risks to aviation. The Civil Aviation theme is therefore identified as Low sensitivity and thus a compliance statement is not required. However, the SACAA will be included on the project stakeholder database.	Low	N/A
Not identified	Defence Theme	Low	The defence theme is identified as Low sensitivity; therefore, a compliance statement is not required. However, the Department of Defence will be included on the project stakeholder database.	N/A	N/A
Health Impact Assessment	Not identified	N/A	The proposed WWTP is designed to improve effluent management by treating effluent more effectively, thereby reducing potential health hazards rather than introducing them. Similarly, the diesel storage	N/A	N/A

Specialist study in DFFE Screening Tool	Theme in DFFE Screening Tool	DFFE Screening Report Sensitivity	Specialist assessments or motivation if not commissioned	Theme Screening by EAP / Specialist (Section 7)	Detail of specialist
			expansion involves enhanced containment and safety measures. An Air Quality Impact Assessment for the proposed project has been commissioned that will also assess possible health or nuisance related impacts associated with potential emissions that may arise. Further thereto, a Noise Impact Assessment has been commissioned as applicable to any noise that may arise from the proposed project. As the project will form part of the McCain Delmas' existing operations, potential health aspects are integrated into the existing health and safety policies. A Health Impact Assessment has not been undertaken for the proposed project.		
Hydrology Assessment	Not identified	N/A	A Conceptual Storm Water Management Plan, as undertaken by WSP, has been developed, to be integrated into the design of the WWTP.	N/A	Johan Jordaan (WSP) Pr Eng- 20080244
Noise Impact Assessment	Not identified	N/A	A Noise Impact Assessment has been commissioned, as undertaken by WSP, due to the nature of the proposed WWTP development specifically, and its proposed location in relation to sensitive receptors.	N/A	Kirsten Collet (WSP) Associate Pr Sci Nat - 115870
Palaeontology Impact Assessment	Palaeontology Theme	Very high	A Palaeontological Impact Assessment has been undertaken by Prof Marion Bamford.	Low	Prof M Bamford Palaeobotanist

Specialist study in DFFE Screening Tool	Theme in DFFE Screening Tool	DFFE Screening Report Sensitivity	Specialist assessments or motivation if not commissioned	Theme Screening by EAP / Specialist (Section 7)	Detail of specialist
Plant Species Assessment	Plant Species Theme	Medium	Plant Species Compliance Statement (included in the Terrestrial Biodiversity Compliance Statement) has been undertaken by WSP.	Low	Rudolph Greffrath (WSP) Pr.Sci.Nat. – 400017/18 (Ecological Science) Shavaughn Davis Pr.Sci.Nat. – 115025 (Zoological Science, Ecological Science)
Socio-Economic Assessment	Not identified	N/A	A Social Impact Assessment, also covering the socio-economic aspects, has been undertaken by WSP.	N/A	Steve Horak Social Scientist
Terrestrial Biodiversity Impact Assessment	Terrestrial Biodiversity Theme	Very high	Terrestrial Biodiversity Compliance Statement (included in the Terrestrial Biodiversity Compliance Statement) has been undertaken by WSP.	Low	Rudolph Greffrath (WSP) Pr.Sci.Nat. – 400017/18 (Ecological Science) Shavaughn Davis Pr.Sci.Nat. – 115025 (Zoological Science, Ecological Science)
Traffic Impact Assessment	Not identified	N/A	The traffic impact is deemed low as the projects will involve limited construction that will not generate significant external traffic. Existing access roads will be utilised during the construction of the WWTP and the expansion of diesel storage without altering the current traffic patterns or road layouts. Construction activities are expected to be short-term and low in intensity, with traffic managed through established	N/A	N/A

Specialist study in DFFE Screening Tool	Theme in DFFE Screening Tool	DFFE Screening Report Sensitivity	Specialist assessments or motivation if not commissioned	Theme Screening by EAP / Specialist (Section 7)	Detail of specialist
			site protocols. Furthermore, the developments do not meet the regulatory thresholds that would typically trigger a Traffic Impact Assessment (TIA), and the R42 road has sufficient capacity to accommodate any minor increases in traffic. As such, the anticipated traffic impact is negligible, and a formal TIA is not considered necessary. However, relevant stakeholders will be notified of the proposed development and added in the project database.		

2.2 APPLICATION FOR ENVIRONMENTAL AUTHORISATION

The appropriate EA application form has been compiled and has been submitted to the MDARDLEA. The application includes a high-level summary of the project description, layout plans and co-ordinates, the list of activities being applied for. A meeting with the MDARDLEA will be scheduled. All correspondence with the CA will be included in the final BA report.

2.3 BASELINE ENVIRONMENTAL ASSESSMENT

The description of the environmental attributes of the project area (Section 6) was compiled through a combination of desktop reviews, specialist inputs and site investigations. Desktop reviews made use of available information, including existing reports, aerial imagery, and mapping.

2.4 BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME

The BA report (this report) has been compiled, summarising the information collated on the project as part of the BA process of the project. A corresponding environmental management programme (EMPr) has been compiled in accordance with Appendix 4 of the EIA Regulations, capturing the recommended mitigation measures to be implemented for the project. The BA report and EMPr will be subjected to public participation and finalised with inputs received from interested and affected parties (I&APs) for submission to the CA, the MDARDLEA.

2.5 IMPACT ASSESSMENT METHODOLOGY

A methodological framework developed by WSP has been used to meet the combined requirements of international best practice and the EIA Regulations. As required by the EIA Regulations, the determination and assessment of impacts have been based on the following criteria:

- Nature of the Impact;
- Significance of the Impact;
- Consequence of the Impact;
- Extent of the impact;
- Duration of the Impact;
- Probability if the impact;
- Degree to which the impact:
 - can be reversed;
 - may cause irreplaceable loss of resources; and
 - can be avoided, managed or mitigated.

Following international best practice, additional criteria have been included to determine the significant effects. These include the consideration of the following:

- Magnitude: to what extent environmental resources are going to be affected;
- Sensitivity of the resource or receptor (rated as high, medium and low) by considering the importance of the receiving environment (international, national, regional, district and local), rarity of the receiving environment, benefits or services provided by the environmental resources and perception of the resource or receptor); and

- Severity of the impact, measured by the importance of the consequences of change (high, medium, low, negligible) by considering inter alia magnitude, duration, intensity, likelihood, frequency and reversibility of the change.

It should be noted that the definitions given are for guidance only, and not all the definitions will apply to all of the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

2.5.1 IMPACT SIGNIFICANCE RATING

The assessment of impacts and mitigation evaluates the likely extent and significance of the potential impacts on identified receptors and resources against defined assessment criteria, to develop and describe measures that will be taken to avoid, minimise or compensate for any adverse environmental impacts, to enhance positive impacts, and to report the significance of residual impacts that occur following mitigation.

The key objectives of the risk assessment methodology are to identify any additional potential environmental issues and associated impacts likely to arise from the proposed project and to propose a significance ranking. Issues/aspects will be reviewed and ranked against a series of significance criteria to identify and record interactions between activities and aspects, and resources and receptors to provide a detailed discussion of impacts. The assessment considers direct¹, indirect², secondary³ as well as cumulative⁴ impacts. The impact assessment methodology that is adapted by WSP for the BAR is described below.

A standard risk assessment methodology is used for the ranking of the identified environmental impacts pre- and post-mitigation (i.e., residual impact). The significance of environmental aspects is determined and ranked by considering the criteria⁵ presented in Table 2-2.

Table 2-2 – Impact Assessment Criterion and Scoring System

Criteria	Score 1	Score 2	Score 3	Score 4	Score 5
Impact Magnitude (M) The degree of alteration of the affected environmental receptor	Very low: No impact on processes	Low: Slight impact on processes	Medium: Processes continue but in a modified way	High: Processes temporarily cease	Very High: Permanent cessation of processes
Impact Extent (E) The geographical extent of the impact on a given environmental receptor	Site: Site only	Local: Inside activity area	Regional: Outside activity area	National: National scope or level	International: Across borders or boundaries

¹ Impacts that arise directly from activities that form an integral part of the project.

² Impacts that arise indirectly from activities not explicitly forming part of the project.

³ Secondary or induced impacts caused by a change in the project environment.

⁴ Impacts are those impacts arising from the combination of multiple impacts from existing projects, the project and/or future projects.

⁵ The definitions given are for guidance only, and not all the definitions will apply to all the environmental receptors and resources being assessed. Impact significance was assessed with and without mitigation measures in place.

Criteria	Score 1	Score 2	Score 3	Score 4	Score 5
Impact Reversibility (R) The ability of the environmental receptor to rehabilitate or restore after the activity has caused environmental change	Reversible: Recovery without rehabilitation		Recoverable: Recovery with rehabilitation		Irreversible: Not possible despite action
Impact Duration (D) The length of permanence of the impact on the environmental receptor	Immediate: On impact	Short term: 0-5 years	Medium term: 5-15 years	Long term: Project life	Permanent: Indefinite
Probability of Occurrence (P) The likelihood of an impact occurring in the absence of pertinent environmental management measures or mitigation	Improbable	Low Probability	Probable	Highly Probability	Definite
Significance (S) is determined by combining the above criteria in the following formula:	$[S = (E + D + R + M) \times P]$ $Significance = (Extent + Duration + Reversibility + Magnitude) \times Probability$				
Impact Significance Rating					
Total Score	4 to 15	16 to 30	31 to 60	61 to 80	81 to 100
Environmental Significance Rating (Negative (-))	Very low	Low	Moderate	High	Very High
Environmental Significance Rating (Positive (+))	Very low	Low	Moderate	High	Very High

2.5.2 IMPACT MITIGATION

The impact significance without mitigation measures will be assessed with the design controls in place. Impacts without mitigation measures in place are not representative of the proposed development's actual extent of impact and are included to facilitate an understanding of how and why mitigation measures were identified. The residual impact is what remains following the application of mitigation and management measures and is thus the final level of impact associated with the development. Residual impacts also serve as the focus of management and monitoring activities during Project implementation to verify that actual impacts are the same as those predicted in this report.

The mitigation measures chosen are based on the mitigation sequence/hierarchy, which allows for consideration of five (5) different levels, which include avoid/prevent, minimise, rehabilitate/restore, offset and no-go in that order. The idea is that when project impacts are considered, the first option should be to avoid or prevent the impacts from occurring in the first place if possible, however, this is not always feasible. If this is not attainable, the impacts can be allowed, however, they must be minimised as far as possible by considering reducing the footprint of the development, for example so that little damage is encountered. If impacts are unavoidable, the next goal is to rehabilitate or restore

the areas impacted back to their original form after project completion. Offsets are then considered if all the other measures described above fail to remedy high/significant residual negative impacts. If no offsets can be achieved on a potential impact, which results in full destruction of any ecosystem for example, the no-go option is considered so that another activity or location is considered in place of the original plan.

The mitigation sequence/hierarchy is shown in Figure 2-1 below.

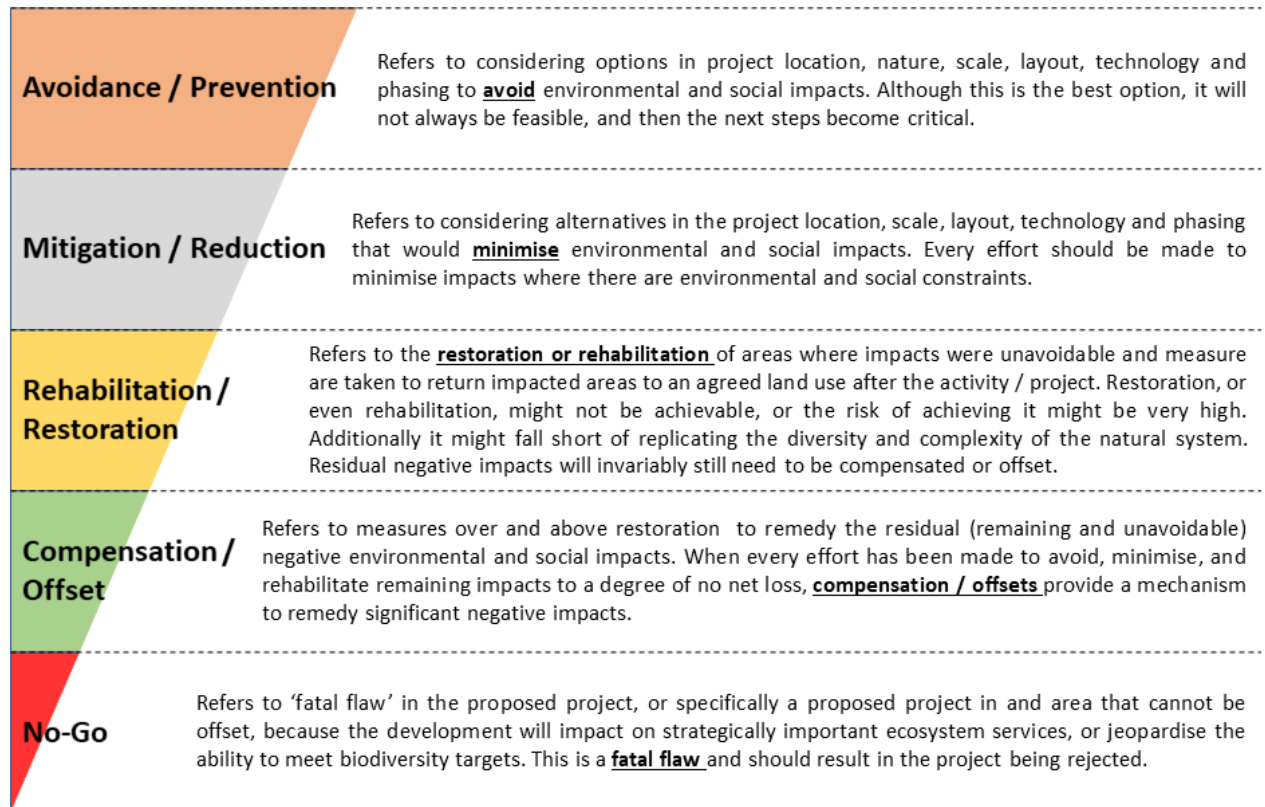


Figure 2-1 - Mitigation Sequence/Hierarchy

2.6 PUBLIC PARTICIPATION PROCESS

2.6.1 APPROACH TO PUBLIC PARTICIPATION

The approach to public participation was based on the following principles:

- Undertaking meaningful and timely participation with I&APs;
- Focus on important issues during the process;
- Undertake due consideration of alternatives;
- Take accountability for information used;
- Encourage co-regulation, shared responsibility and a sense of ownership over the proposed project lifecycle;
- Apply "due process", particularly concerning public participation as provided for in the EIA Regulations, 2014 (GNR 326) (as amended); and
- Consider the needs, interests and values of I&APs.

The public participation guideline, drafted by the Department of Environmental Affairs (DEA) (now DFFE) in 2017, tabulates the level of public participation required for various levels of anticipated project impacts. This table has been used to determine the approach to be taken for the public participation process (PPP) for the proposed project. Highlighted cells (red) indicate the applicable response to the anticipated impacts for the proposed project. The results of the process are shown in Table 2-3.

Table 2-3 – Level of Public Participation as per Public Participation Guideline (DEA, 2017)

Scale of Anticipated Impacts	Recommended Response	
	If “Yes”	If “No”
Are the impacts of the project likely to extend beyond the boundaries of the local municipality?	Formal consultation with other affected municipalities should be carried out during the PPP.	No need to have a formal consultation with other municipalities during PPP. Minimum requirements for public participation in accordance with EIA Regulations must be met.
Are the impacts of the project likely to extend beyond the boundaries of the province?	Formal consultation with other affected provinces should be carried out during the PPP.	No need to have a formal consultation with other provinces during PPP. Minimum requirements for public participation in accordance with EIA Regulations must be met.
Is the project a greenfield development (a new development in a previously undisturbed area)?	Extensive consultation with Registered Interested and Affected Parties (RI&APs) might be required before a decision is taken on the project in order to gather more information and to ensure that there is minimal impact on the environment.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Does the area already suffer from socio-economic problems (e.g. job losses) or environmental problems (e.g. pollution), and is the project likely to exacerbate these?	Extensive consultation with RI&APs within the area should be undertaken, to gather more information on both the socio-economic and environmental problems.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Is the project expected to have a wide variety of impacts (e.g. socio-economic and ecological)?	Thorough consultation needs to be conducted with RI&APs, in order to address variety of impacts.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Public and environmental sensitivity of the project:		
Are there widespread public concerns about the potential negative impacts of the project?	Broader consultation with all RI&APs will need to be undertaken.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Is there a high degree of conflict among RI&APs?	There might need to be more consultation to ensure that there is consensus reached among RI&APs.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Will the project impact on private land other than that of the applicant?	Consultation with the private landowner must be done, and all	Minimum requirements for public participation in accordance with EIA Regulations must be met.

Scale of Anticipated Impacts	Recommended Response	
	If “Yes”	If “No”
	their concerns need to be addressed.	
Does the project have the potential to create unrealistic expectations (e.g. that a new factory would create a large number of jobs)?	Thorough consultation that addresses the perceptions of unrealistic expectations needs to be carried out.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Potentially affected parties:		
Has very little previous public participation taken place in the area?	More thorough public participation should take place within the area, to ensure that all potential and RI&APs participate.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Did previous public participation processes in the area result in conflict?	Additional consultation might be needed to ensure that issues of conflict are addressed effectively.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Are there existing organisational structures (e.g. local forums) that can represent I&APs?	Organizational structures might minimise conflict whilst maximising the participation.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Is the area characterised by high social diversity (i.t.o. socio-economic status, language or culture)?	Proper consultations that address language and cultural diversity should be promoted.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Were people in the area victims of unfair expropriations or relocation in the past?	PPP should be extensive and address any unfair practices that occurred in the past.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Is there a high level of unemployment in the area?	The PPP should ensure that there are no unrealistic expectations created due to the project. The consultation should ensure that any unrealistic expectations are adequately addressed before the project starts.	Minimum requirements for public participation in accordance with EIA Regulations must be met.
Do the RI&APs have special needs (e.g. a lack of skills to read or write, disability, etc)?	Consultation should include mechanisms that will ensure full participation by people with special needs.	Minimum requirements for public participation in accordance with EIA Regulations must be met.

2.6.2 WHAT IS AN INTERESTED AND AFFECTED PARTY

An I&AP is defined as any person, group of persons or organisation(s) interested in or affected by an activity, and any organ of the state that may have jurisdiction over any aspect of the activity.

The difference between an I&AP and a registered I&AP:

- An I&AP can be directly or indirectly impacted by a proposed activity;
- A registered I&AP is a person whose name has been placed on the register of registered I&APs. According to the DEA (2017), only registered I&APs will be notified:
 - Of the availability of reports and other written submissions made to the CA by the Applicant; and

- Of the outcome of the application, the reasons for the decision, and that an appeal may be lodged against a decision.

2.6.3 RIGHTS, ROLES AND RESPONSIBILITIES OF I&APS

In terms of Chapter 6, specifically, Section 43(1) of the EIA Regulations, registered I&APs have the right to bring to the attention of the CA any issues that they believe may be of significance to the consideration of the application. The rights of I&APs are qualified by certain obligations, namely:

- I&APs must ensure that their comments are submitted within the timeframes that have been approved by the CA/Appeal Authority, or within any extension of a timeframe agreed by the Applicant, EAP (WSP), or the CA; and
- Disclose to the EAP any direct business, financial, personal or other interest that they might have in the approval or refusal of the application.

The roles of I&APs in a public participation process usually include one or more of the following:

- Assisting in the identification and prioritisation of issues that need to be investigated;
- Making suggestions on alternatives and means of preventing, minimising and managing negative impacts and enhancing proposed project benefits;
- Assisting in or commenting on the development of mutually acceptable criteria for the evaluation of decision options;
- Contributing information on public needs, values and expectations;
- Contributing local and traditional knowledge; and
- Verifying that their issues have been considered.

In order to participate effectively, I&APs should:

- Become involved in the process as early as possible;
- Register as I&APs;
- Advise the EAP of other I&APs who should be consulted;
- Contribute towards the design of the public participation process (including timeframes) to ensure that it is acceptable to all I&APs;
- Follow the process once it has been concluded;
- Read the material provided and actively seek to understand the issues involved;
- Give timely responses to correspondence;
- Be respectful and courteous towards other I&APs;
- Refrain from making subjective, unfounded or ill-informed statements; and
- Recognise that the process is confined to issues that are directly relevant to the application.

2.6.4 PUBLIC PARTICIPATION PLAN

2.6.4.1 I&AP Identification

A stakeholder database has been developed for the Project. Following the completion of the public participation process, the stakeholder database comprises approximately 110 stakeholders. The database is captured in an Excel spreadsheet, attached in Appendix F. The contact details of stakeholders will not be made available to a third party unless permission is obtained from the stakeholder in writing.

The EAP endeavoured to ensure that individuals/organisations from referrals and networking were notified of the proposed project. I&APs were identified at the horizontal (geographical) and vertical extent (organisation level).

Relevant authorities (organs of state) have been automatically registered as I&APs. In accordance with the EIA Regulations, all other persons must request in writing to be placed on the register or submit written comments in order to be registered as I&APs and included in future communication regarding the project.

The I&AP database for the proposed project will continue to be updated throughout the EA application process as follows:

- Networking with local business owners, non-governmental agencies, community-based organisations, and local council representatives;
- Advertising in the press;
- Placement of community notices; and
- Receiving completed registration and comment sheets from I&APs.

Table 2-4 – Interested and Affected Parties

NEMA Requirement	Discussion
(i) the owner or person in control of that land if the applicant is not the owner or person in control of the land	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. McCain, the Applicant, is the owner of the land.
(ii) the occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken	The proposed project will entail development within the existing premises owned by McCain. Site notices were placed at locations accessible to the public in and around McCain. An advert was placed in the Highveld Chronicle newspaper in both English and isiZulu. The purpose of the advertisement was to notify the public about the proposed project and to invite them to register as stakeholders.
(iii) owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken	
(iv) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area	Ward Councillors of Ward 32 (Victor Khanye Local Municipality) were included in the I&AP database.
(v) the municipality which has jurisdiction in the area	Victor Khanye Local Municipality is included in the I&AP database.
(vi) any organ of state having jurisdiction in respect of any aspect of the activity	The organs of the state that have jurisdiction over the activity are MDARDLEA and Victor Khanye Local Municipality. These two organs of state were provided with written notification of the proposed project via email.

NEMA Requirement	Discussion
(vii) any other party as required by the competent authority.	<p>All tiers of government, namely, national, provincial, local government and parastatals are included in the I&AP database, including:</p> <ul style="list-style-type: none"> ■ Mpumalanga Provincial Heritage Resources Authority; ■ Mpumalanga Department of Water and Sanitation (DWS); ■ Air Traffic & Navigation Services (ATNS); ■ South African Civil Aviation Authority (SACAA); ■ South African National Defence Force (SANDF); ■ Council for Geosciences (GCS); ■ Victor Khanye Local Municipality; ■ Nkangala District Municipality; and ■ Mpumalanga Tourism and Parks Agency (MTPA).

2.6.4.2 Protection of Personal Information

In terms of the Protection of Personal Information Act, 2013 (Act 04 of 2013) (POPIA), WSP will ensure the protection of I&APs' personal information. No contact information of I&APs will be shared in the public domain. The contact details of stakeholders will also not be made available to a third party unless permission is obtained from the stakeholder in writing.

2.6.4.3 Notification Procedures

Direct Notification

Notification of the proposed project was issued to stakeholders via direct correspondence (i.e. email and SMS) on **16 July 2026**. The purpose of the notification was to offer stakeholders the opportunity to register on the project database and to communicate the details of the project and how to provide comment on the draft BAR. A reminder of the BAR's availability and due date for comments was sent to all stakeholders on **13 August 2026**. Proof of these notifications can be found in Appendix F. Additional notifications will be issued to stakeholders as part of the resubmission process.

Newspaper Advertisements

Notification of the proposed project as well as an opportunity to register and comment on the BAR was issued to the general public via advertisements published in the Highveld Chronicle on **17 July 2026**, in English and isiZulu. A copy of the advertisement is included in Appendix F. An additional newspaper advertisement will be placed in the Highveld Chronicle as part of the resubmission process.

Site Notices

The EIA Regulations, 2014, as amended, require that site notices be fixed at places conspicuous to the public at the boundary or on the fence of the site where the activity (to which the application relates) is to be undertaken, as well as at any alternative sites. Posters (in English and isiZulu), conforming to the size specifications as per the EIA Regulations, 2014 were placed on **16 July 2026** at the following locations (Table 2-5).

Table 2-5 – Site Notice Placement

Street	Coordinates
Botleng Library	26°6'18.63"S; 28°41'32.22"E
Botleng Mall	26°6'9.57"S; 28°40'43.90"E
Delmas Public Library	26°9'0.46"S; 28°41'1.01"E
Delmas Taxi Rank	26°9'1.33"S; 28°40'57.61"E
McCain Delmas	26°7'37.94"S; 28°40'48.24"E
Vooma Botleng	26°7'59.78"S; 28°41'11.02"E
36 Sarel Cilliers Street	26°7'53.77"S; 28°41'2.03"E
Along Road 9, Delmas	26°7'44.33"S; 28°40'4.97"E

A copy of the site notices and proof of placement are included in Appendix F.

Site notices will be placed in the same locations as part of the resubmission process.

Public Review of the Draft BA Report

The draft BAR was available for a 30-day public review period from **17 July 2026** to **18 August 2026**, on the WSP website (<https://www.wsp.com/en-za/services/public-documents>). Hard copies of the reports were made available at the public places as indicated in Table 2-6.

Table 2-6 –Locations where hard copies of the BAR were available

Name	Address	Co-ordinates
Delmas Public Library	Cnr of 3rd Street and Van Riebeeck Ave, Delmas, 2210	26° 8' 60" S; 28° 40' 58.8" E
Botleng Library	Cnr Mlambo & Julies Street, Botleng Ext3, Delmas, 2210	26° 5'37.01"S; 28°41'40.13"E

As part of the resubmission process, this report will be posted on WSP's website and at the same public places as per the table above.

2.6.4.4 Comment and Response Report

All concerns, comments, viewpoints and questions (collectively referred to as 'issues') received during the public participation process have been documented and responded to adequately in a Comment and Response Report (CRR) included in Appendix F. The CRR records the following:

- List of all issues raised;
- Record of who raised the issues;
- Record of where the issues were raised;
- Record of the date on which the issue was raised; and
- Response to the issues and comments raised.

The CRR will be updated to include any additional comments received as part of the resubmission process.

2.7 FINAL BAR SUBMISSION AND DECISION MAKING

Once the public comment period has closed, the final BAR will be submitted to MDARDLEA for decision-making. The department is allocated 107 calendar days to review the final BAR as per the EIA Regulations. I&APs will be notified of the final BAR availability. I&AP comments after final BAR submission are to be submitted by I&APs directly to MDARDLEA for consideration. I&APs will be notified of this requirement in the final BAR notification.

Once the CA has issued a decision on the application, I&APs will be notified of the decision via email and SMS, including the process to be followed should an I&AP wish to appeal the decision.

2.8 GAPS, UNCERTAINTIES AND LIMITATIONS

The EIA Regulations require that a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed must be included in the BA report. The following general gaps, uncertainties and limitations apply:

- The project information received from McCain is deemed to be accurate and representative of the project; and
- Additional specialist input might be required by the CA in order to make a decision regarding the application.

2.8.1 AIR QUALITY ASSESSMENT

Various assumptions were made that may impact on the results obtained for the air quality impact assessment.

2.8.1.1 General

- Unless otherwise stated, operational information for the McCain Delmas Plant was provided by McCain.
- The raw materials, energy sources and production rates are based on data provided by McCain;
- Due to the limited dust fallout monitoring data available, this data was not included in the study. Additionally, Total Suspended Particulates (TSP) is not a pollutant of interest;
- Construction activity and emissions are excluded from the study. Due to the nature of construction, impacts are of a limited duration; and
- As indicated in the stack emission reports, the boilers at McCain fall below the limits for regulation under Section 21 of National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) (as amended) (NEMAQA) and the Declaration for Small Boilers as Controlled Pollutants and Establishment of Emission Standards of 2013 (Government Gazette 36973 Notice 831).

2.8.1.2 Emissions Inventory

- The emissions inventory, calculated from the US EPA AP42 and NPI emission factors, is assumed to be representative of reality;
- The latest stack emissions testing reports as provided by McCain were used;
- PM₁₀ taken as 92% of PM as per US EPA AP-42, B.2-18;
- PM_{2.5} taken as 82% of PM as per US EPA AP-42, B.2-18;
- Emission rates for bulk storage tanks were simulated using the USEPA TANKS 4.0.d emissions estimation model as recommended by the *Modelling Regulations*;
- Caustic soda has a low volatility and cannot be simulated in TANKS 4.09d;

- Ammonia tanks are pressurized and do not have working and breathing losses under normal operations, and as such were not considered in this assessment;
- Tank working volumes are calculated based on an assumed maximum liquid height of 90%;
- Average liquid heights were assumed to be 50% of the maximum liquid height;
- Where actual storage tank shell colours were not available options in TANKS 4.0.d, colour substitutes were applied;
- A gas exit velocity of 0.001 m/s has been assigned to all modelled tanks, in line with the *Modelling Regulations*;
- As confirmed by McCain, no emissions control equipment is used, as such no emission reduction factors were applied to the emissions inventory;
- Lengths (m) of the various roads were based on the measurement of the line (route) drawn in Google Earth;
- The silt content of all roads was assumed to be 8.4% as per generic data from US EPA AP-42, 13.2.2 Unpaved Roads, Table 13.2.2-1;
- It is assumed that no road wetting occurs on site;
- The lower range value for typical moisture content of coal provided by the US EPA reference guideline was applied. The lower range moisture value will result in higher emission rates and is therefore considered environmentally conservative;
- The upper range value for typical silt content of coal provided by the US EPA reference guideline was applied. The upper range silt value will result in higher emission rates and is therefore considered environmentally conservative;
- The existing clarifier is assumed to be used in both Scenarios 1 and 2 used in the model;
- The vapour space within covered or enclosed components of the proposed WWTW are assumed to reach a state of equilibrium and thus were not assessed as potential odour sources;
- The area of the clarifier was assumed using Google Earth™; and
- The length and width of the aeration basin was assumed as 10 m x 10 m.

2.8.1.3 Dispersion Model

- Building downwash effects have been accounted for in the dispersion model using building location, shape and height visible on Google Earth™;
- The building height of the proposed Biogas Plant was assumed to be 5 m; and
- Variable emission rates have been applied as follows:
 - Coal handling, one hour per day, over 365 days.
 - Diesel generators:
 - Generator 1-3, six hours per month, one day per month over twelve months.
 - Generator 4, 2.5 hours per month, one day per month over twelve months.

2.8.2 ENVIRONMENTAL ACOUSTIC ASSESSMENT

- The information provided regarding the proposed operational activities is assumed to be representative of what will occur in reality.
- Due to the erratic nature of the construction phase, a quantitative assessment of construction phase acoustic impacts was not undertaken, but rather a qualitative discussion thereof.

- The acoustic model considered surrounding terrain; however, buildings were not included. Such an approach represents a worst-case scenario with all sound propagating away from the source and not reflecting off/attenuating through surrounding structures.
- The height of the biogas flare was assumed to be 10 m.
- As a worst-case scenario, it was assumed that the biogas will be discharged to a new biogas engine.
- It is assumed that the biogas engine will be located alongside the biogas and power generation building of the WWTP.
- Specifications of all listed equipment is unknown, so sound power level data for generic sources was utilised.
- As a worst-case assessment, all sources were run as unenclosed in the model, due to uncertainties with building and enclosure types to be used.

2.8.3 SOIL, LAND CAPABILITY AND AGRICULTURAL POTENTIAL ASSESSMENT

- The footprint designated for the new diesel storage tank and clarifier is located within an existing operational area and was thus not surveyed.

2.8.4 GEOTECHNICAL

- No shallow groundwater seepage was intersected in any of the test pits that were excavated during the investigation, but the investigation was undertaken during the dry season, and it is possible that shallow perched water tables may develop on the interface of the transported soils and underlying chert residuum during and after period of intense and sustained rains.
- The assessment was based on limited point data and given the inherent variability of dolomite bedrock, the possibility of very large sinkholes developing cannot be excluded.
- The foundation assessment only applies to the depth of the test pitting investigation of about 3 m.

2.8.5 STORM WATER ASSESSMENT

- An updated georeferenced survey was not available.
- The plant terrace level, along with earthworks cut and fill around the perimeter, was not available.

2.8.6 TERRESTRIAL BIODIVERSITY, FAUNA AND FLORA COMPLIANCE STATEMENT

- The baseline description is qualitative and is based on available national datasets and published literature for the study area region, and previous ecological studies conducted in the study area in conjunction with a dry season screening survey.
- The field study was completed in the dry season; therefore, certain plant species that remain dormant during this time might not have been recorded.

2.8.7 SOCIAL IMPACT ASSESSMENT

The following assumptions have been made for this assessment:

- The conclusions and findings of the SIA are limited by the information available for the desktop assessment (Stats SA, municipal reports, etc.);
- Information was gathered from the IDPs, updated every five years; and the information can be outdated; and

- The secondary data is assumed to reflect the local social context accurately.

2.8.8 PALAEOLOGY IMPACT ASSESSMENT

During the site visit, the land was very disturbed and covered with very thick vegetation cover consisting of grasses, shrubs and trees so visibility was low. It is therefore unknown whether fossils lie below the surface and will be only confirmed once excavations have commenced.

2.8.9 HERITAGE IMPACT ASSESSMENT

Very dense vegetation cover at the time of the assessment limited visibility on the ground and hampered mobility. The study area was also used in the recent past as a temporary waste storage and salvaging area for the McCain Delmas Plant. Some recent remains (old braai facility and parking area) are also present in the area.

3 PROJECT DESCRIPTION

This section provides descriptions of the location of the project area, as well as the existing and proposed development activities. This section also considers the need and desirability of the project.

3.1 LOCATION AND LAYOUT 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 3-1 and Figure 3-2 for the localities of the proposed developments, and Table 3-1 for the cadastral information of the site and Table 3-2 for the co-ordinates of the proposed developments.

Table 3-1 –Cadastral Information of the Site

Details required as per GNR 326 Annex 1 (3)	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

Table 3-2 – Coordinate Points of the Cadastral Land Parcel

Point	Latitude	Longitude	Area/dimensions
WWTP			
Corner A	26° 7' 27.649" S	28° 40' 51.957" E	Approximately 9 000 m ²
Corner B	26° 7' 26.056" S	28° 40' 58.017" E	

Point	Latitude	Longitude	Area/dimensions
Corner C	26° 7' 30.729" S	28° 40' 59.588" E	
Corner D	26° 7' 32.322" S	28° 40' 53.527" E	
Existing Clarifier			
Point 1	26° 7'34.77"S	28°40'49.72"E	Approximately 263 m²
New Diesel Storage			
Point 1	26° 7'39.67"S	28°40'39.77"E	Approximately 35.3 m²

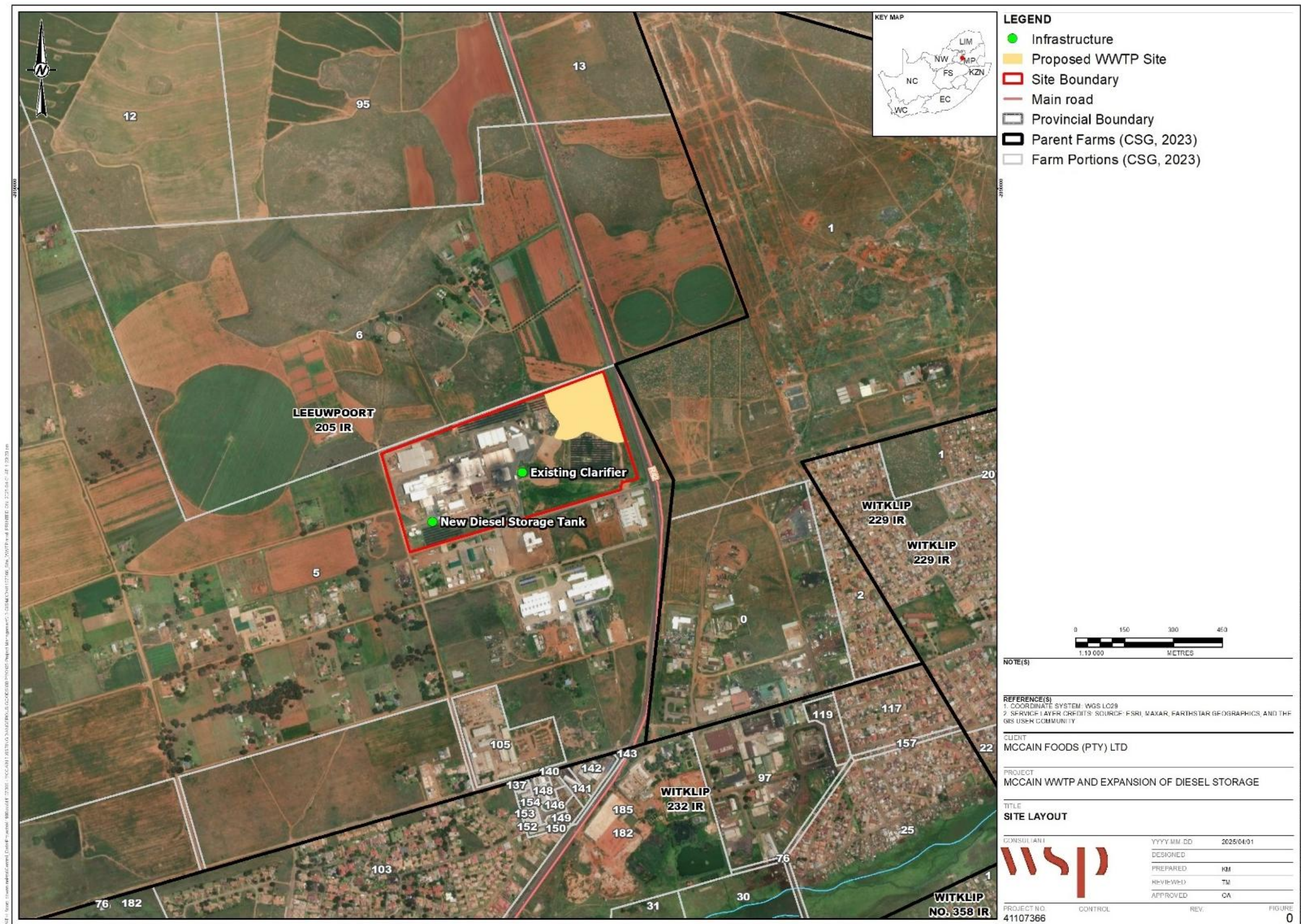


Figure 3-1 – Locality map of the Proposed WWTP and associated infrastructure

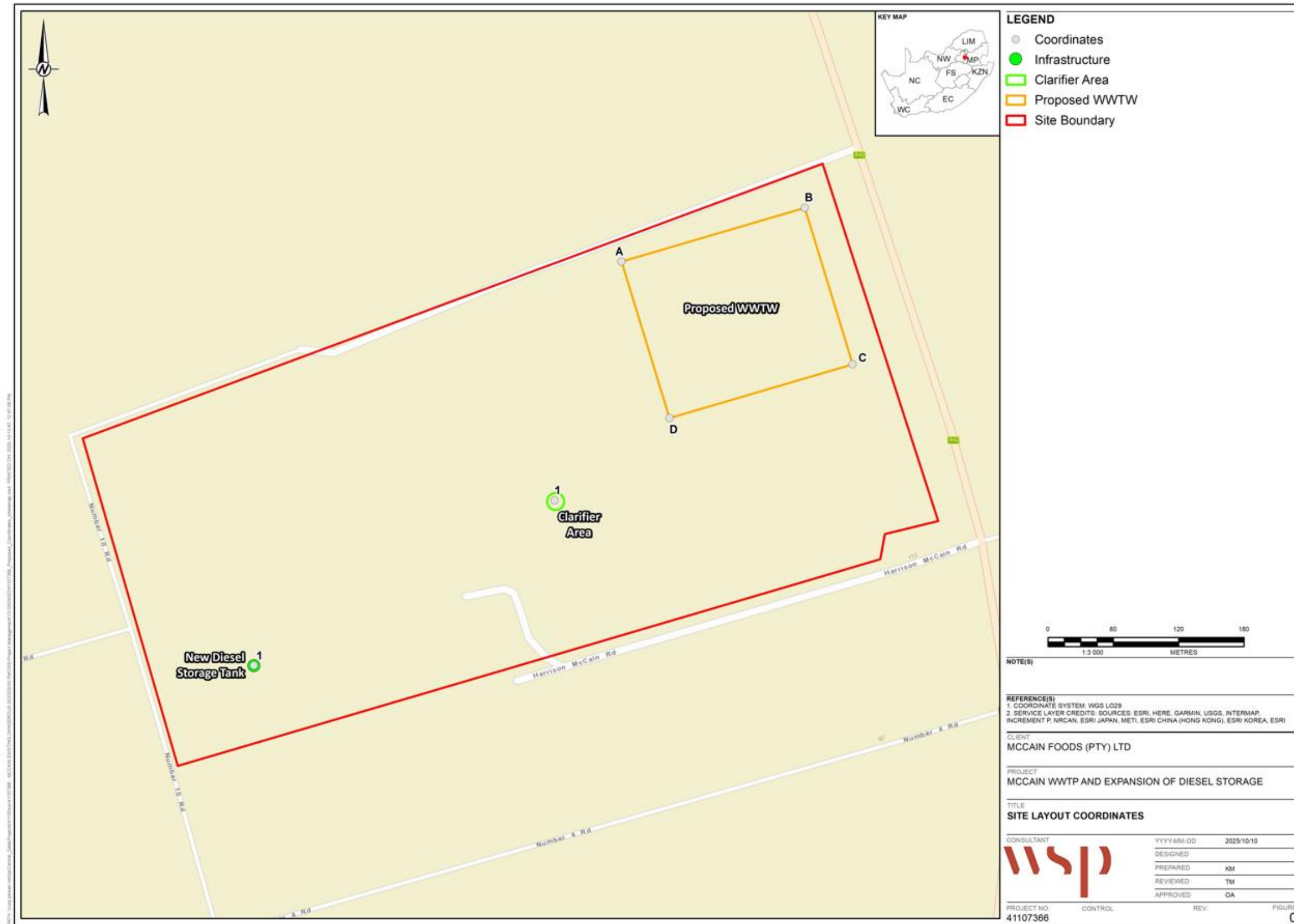


Figure 3-2 – Co-ordinates map

3.2 PROJECT COMPONENTS

3.2.1 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 3-3 below.

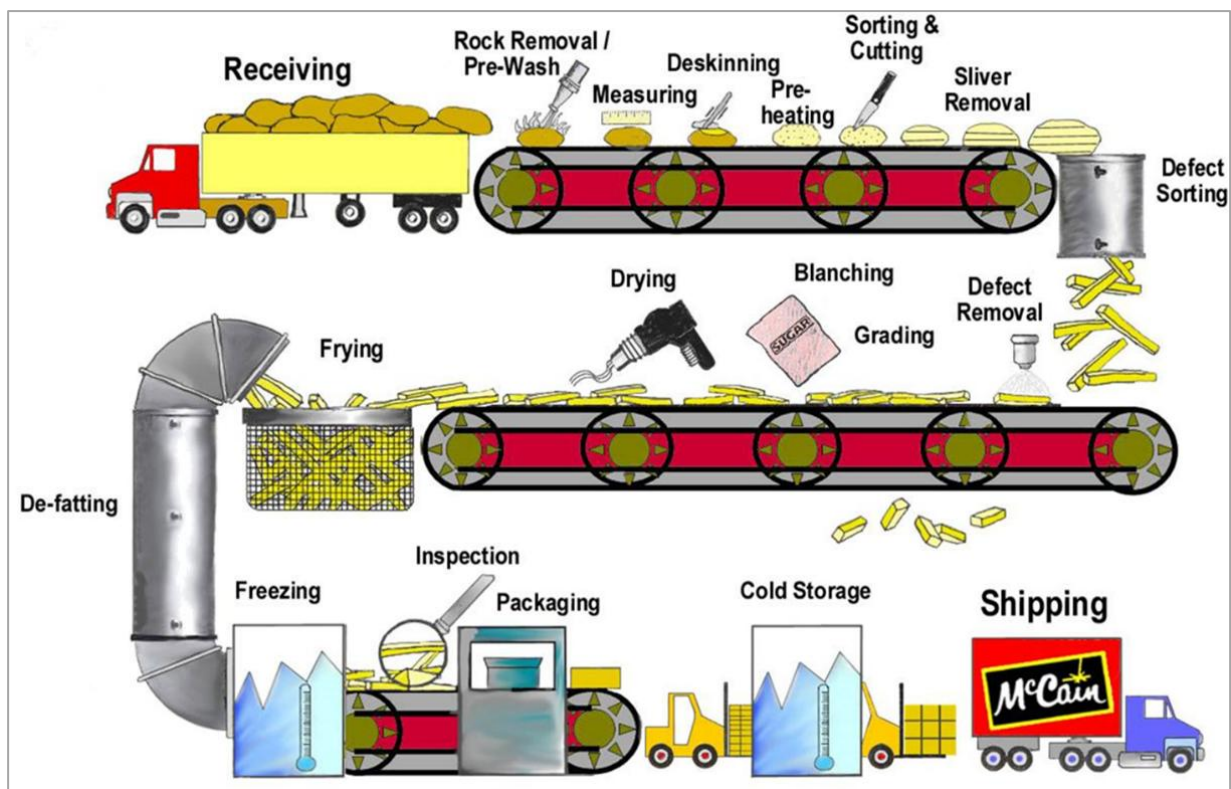


Figure 3-3 - Production flow diagram

3.2.1.1 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).

3.2.1.2 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 pump⁶.

3.2.1.3 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.

3.2.1.4 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.

3.2.1.5 Raw Materials Used

Table 3-3 lists the raw materials used at McCain. In addition, Table 3-4 presents the energy sources.

Table 3-3 – 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

⁶ 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 3-4 – 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

3.2.2 PROPOSED OPERATIONS

3.2.2.1 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 (Figure 3-4):

- 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

3.2.2.2 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.

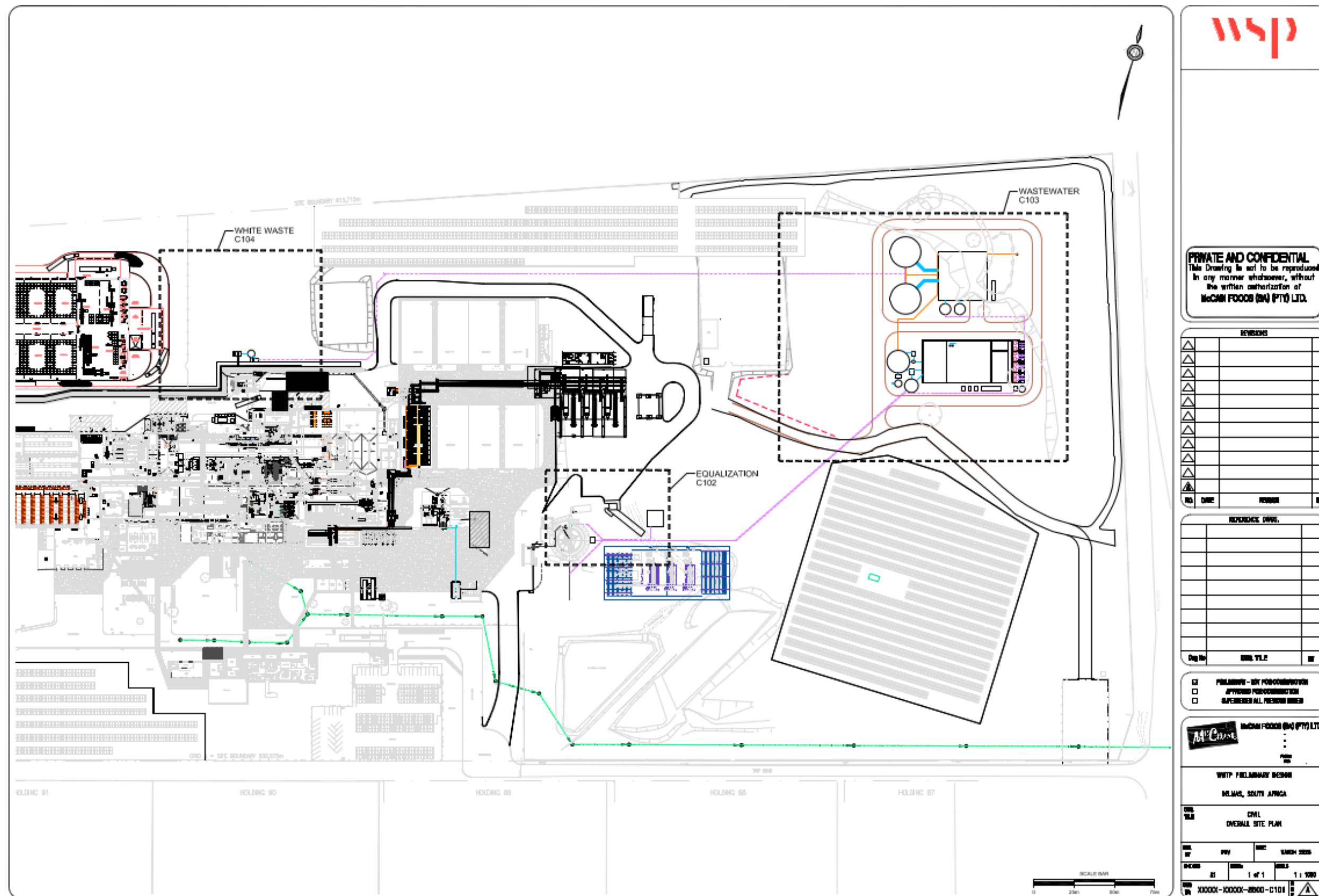


Figure 3-4 – Proposed WWTP Layout Plan

3.3 WWTP INFRASTRUCTURE

The design of the proposed WWTP takes into consideration existing infrastructure and what still need to be constructed. The existing infrastructure includes the screening system, oily water system and primary clarifier (refer to Section 3.2.1.4). New infrastructure includes a MBR tank, anaerobic digester and equalisation tank. A detailed description of the proposed WWTP infrastructure is provided below and in the design report included as Appendix B.

3.3.1 MEMBRANE TECHNOLOGY OVERVIEW

A MBR uses membranes to provide a positive barrier to solids and achieve effluent clarification following activated sludge treatment. Effluent from the activated sludge system is collected in the membrane tank and drawn through the membranes using MBR effluent pumps. Solids are retained on the membrane surface, while clarified water is discharged to the final discharge point.

To maintain membrane performance, the system employs short-duration back-pulsing, where clarified effluent is pumped in reverse through the membranes. This dislodges accumulated solids into the tank, where they can be recycled as Return Activated Sludge (RAS) or sent to sludge storage and thickening for disposal as WAS. Additionally, air scour blowers provide continuous scouring of the membranes to ensure optimal operation.

The membrane tank can be installed above or below ground; for this system, an inground concrete tank is likely, enabling gravity-fed operation. Biogas generated in the UASB reactor system and anaerobic digesters will power generators, providing backup electricity for critical WWTP infrastructure during load-shedding events and blackouts. An emergency overflow will also be included, allowing the membrane tank contents to discharge by gravity to the final discharge point in the event of backup generator failure.

3.3.2 ANAEROBIC DIGESTER

The WWTP will include an anaerobic digestion process to process the solid wastes produced by the facility, to reduce disposal costs and allow for on-site biogas production and use. Solid wastes from the plant, including slivers, nubbins, cubes, peel, trimmings and waste potatoes are currently captured and disposed off-site. McCain will anaerobically digest the combined solid waste to generate biogas. To generate biogas from the solid potato wastes, the wastes are turned into slurry and pumped to an anaerobic digester that breaks down the organic loading present in the slurry and produces a biogas that can be scrubbed and combusted in either a boiler or a generator. The digestate is then passed through a centrifuge to remove any remaining solids, which would then be disposed off-site. Sludge from the centrifuges would be pumped to the activated sludge reactors.

3.3.3 EQUALISATION TANK

To provide additional equalisation and normalisation of flows through the WWTP, a new coated concrete equalisation tank will be designed and constructed. The equalization tank will intercept the existing feed to the primary clarifier and provide equalisation volume to reduce flow variability. New equalisation lift pumps will pump from the equalization tank to the existing primary clarifier. A new submersible mixer will be provided to ensure the equalisation tank contents remain homogenous and to limit the potential for the development of odours. The equalisation tank will be installed as physically close to the existing primary clarifier as possible to ensure the hydraulics of the existing system are preserved. The equalization tank will be operated based on level, with the primary clarifier feed pumps operating at a fixed flowrate until specific level setpoints, when pump speed will be increased. This

will reduce surging in the primary clarifier. A mixer will be installed to prevent settling of material before the primary clarifier.

3.3.4 WATER QUALITY

The anticipated water quality leaving the primary clarifier and acting as the influent for the proposed WWTP was determined based on estimated influent water quality data and assumed primary clarifier and DAF performance. The Victor Khanye Local Municipality has specified compliance discharge targets for the facility. The proposed WWTP design will ensure that the effluent will meet these targets. While these represent the compliance targets for the local municipality, it is understood that McCain wishes to maintain the option to discharge directly to the environment or further treat the effluent to recycle water into the facility in the future. As such, the WWTP will be designed to achieve more stringent effluent quality targets. Details on how the WWTP will be designed to handle the feed water quality is indicated in Section 3.4, Figure 3-5 and in the Design Report attached as Appendix B to this report.

3.4 WWTP PROCESSES

3.4.1 UPFLOW ANAEROBIC SLUDGE BLANKET REACTOR

An upflow anaerobic sludge blanket (UASB) reactor system will be installed upstream of the main biological treatment process to reduce COD loading and generate biogas. Anaerobic pretreatment is an efficient means of reducing the required size of the downstream aerobic processes and provides some amount of biogas as a by-product. The UASB system is a compact sized anaerobic system with high specific COD loading rate that utilises granular anaerobic biomass to digest soluble feedstocks and produce methane as a by-product.

UASB systems are utilised extensively in McCain and provide a robust pre-treatment for potato processing wastewater. Higher rate systems are available on the market but are not recommended unless site conditions dictate, as they tend to be less robust in operational stability. A pumped bypass will be included to allow a controlled stream of wastewater to bypass the UASB and ensure the aerobic treatment system has sufficient COD. In addition, a gravity bypass from the UASB feed tank will also be installed to allow the UASB to be completely bypassed and for the treatment system to flow entirely by gravity if required.

The UASB sludge tank will be used for storing excess sludge, to allow the system to be reseeded if required. The UASB system will also include chemical dosing pumps for pH adjustment and micronutrient dosing. Full details of parameters for the UASB system are indicated in the Design Report attached as Appendix B to this report.

3.4.2 ACTIVATED SLUDGE PROCESS

The aerobic treatment system provides COD, phosphorus, and nitrogen removal in a four-stage Bardenpho process configuration, utilising a pre-anoxic zone, aerobic zone, post-anoxic zone, and re-aeration zone. This form of activated sludge system allows for efficient nitrification-denitrification by providing mixed pre- and post-anoxic zones where denitrification occurs. The aerobic zone allows for the growth of aerobic bacteria, which consume COD and ammonia. This approach requires a more complicated design than a typical single-stage aeration basin but is required when low effluent total nitrogen is required.

Effluent from the activated sludge plant requires clarification to separate the biomass solids in the mixed liquor and allow for discharge. This separation also allows for the creation of Return Activated Sludge (RAS) and Waste Activated Sludge (WAS) streams. The RAS returns the activated sludge biomass to the beginning of the process to maintain the population of microorganisms that allow for adequate treatment. The RAS system allows the operator to control the mass of biomass in the treatment systems and operate the system at a steady state condition. This can be achieved through the Membrane Bioreactor (MBR).

3.4.3 MEMBRANE TECHNOLOGY OVERVIEW

A MBR uses a membrane to provide a positive barrier to solids and provide effluent clarification following the activated sludge treatment. Effluent from the activated sludge system is collected in the membrane tank and is drawn through the membranes using MBR effluent pumps. Solids are retained on the outside surface of the membrane and clarified water is discharged to the final discharge point.

The membranes are backpulsed for very short periods of time by pumping clarified effluent in reverse through the membranes. This causes the film of solids that has built up on the membrane to dislodge into the bulk volume of the tank, where it can either be recycled as RAS or sent to sludge storage and thickening for disposal as WAS. Air scour blowers are also required to provide scouring of the membranes to ensure optimal performance.

The membrane tank can either be above ground or below ground. For this system it is likely that an inground concrete tank would be used, allowing the tank to be fed by gravity. Biogas generated in the UASB and anaerobic digesters will be used to power generators, which will allow for backup power to be provided to some critical WWTP infrastructure, to ensure the plant can continue to operate during load shedding events and brownouts/blackouts. An emergency overflow will be provided, which would allow the contents of the membrane tank to overflow by gravity to a containment tank in the event of a failure of the backup generators.

3.4.4 MEMBRANE BIOREACTOR (MBR) ACTIVATED SLUDGE SYSTEM OVERVIEW

The MBR is designed using a four-stage Bardenpho process, consisting of a pre-anoxic zone, aerobic zone, post-anoxic zone, and re-aeration zone. This form of activated sludge system allows for a higher degree of total nitrogen removal, by providing mixed pre- and post-anoxic conditions where denitrification can occur.

The main aerobic treatment zone primarily provides biodegradable COD oxidation and nitrification, while also up-taking small quantities of phosphorus and nitrogen for cell growth and maintenance, while the anoxic zone provides an environment for denitrifying bacteria, enabling the biological reduction of nitrate to elemental nitrogen. The final re-aeration zone is used to strip elemental nitrogen from the mixed liquor, provide oxygen to reoxygenate the biomass, and to remove any excess carbon source material added to promote denitrification.

3.4.5 PROCESS OVERVIEW

The influent to the activated sludge system is combined in an influent splitting chamber, with a chamber and connection provided to allow for a future treatment train, if required. In this chamber, the UASB effluent, UASB bypass, RAS, and mixed liquor recycle (MLR) are combined and fed into the activated sludge treatment system. The combined influent flows through overflow weirs in the walls of the activated sludge system in the following order: pre-anoxic zone, aerobic zone, post-anoxic zone, re-aeration zone.

Mixed liquor recycle pumps will withdraw mixed liquor containing nitrified water from the outlet of the aerobic zone and return it to the influent splitting chamber for denitrification in the pre-anoxic zone. The MLR pumps will be housed outdoors adjacent to the aeration basin and will pump at approximately two times the influent flowrate to the system.

The aerobic and re-aeration zones will contain removeable fine bubble diffusers, with air provided by external hybrid aeration blowers. The membrane tank will also consist of a designated blower set for periodic membrane cleaning. The diffuser grids in this configuration must be removeable to facilitate diffuser maintenance. A flanged connection will be provided at the blowers for additional future blowers and connection to future aeration grids if required.

The pre- and post-anoxic zones do not have aeration grids and must be maintained in a well-mixed state. Removeable submersible mixers will be installed in the basins providing complete mixing of each tank. Mixed liquor from the re-aeration basin is fed into the membrane tank by gravity, from which it is drawn through the membranes through two (2) MBR permeate pumps to a final effluent tank, before overflowing and being discharged by gravity to the sewer. The permeate pumps will be reversing rotary lobe-style pumps and will also function as backpulse pumps. The membranes are frequently backpulsed for short periods of time, which causes accumulated sludge on the membrane surface to dislodge and enter the tank as mixed liquor. The residual mixed liquor will concentrate and pass to the recycle system where it will be pumped to the influent splitting chamber. A portion of the sludge from the MBR tank is removed from the system as waste activated sludge (WAS) to maintain the desired biological composition in the reactor tanks.

3.4.6 PHOSPHORUS REMOVAL

Chemical phosphorus treatment is required to reach the targeted effluent values, as microbial phosphorus uptake will only constitute a small portion of the required removal. This can be conducted with either iron (ferric) or aluminium (alum) salts to precipitate insoluble phosphorus. The precipitated phosphorus sludge is unable to pass through the membrane and will be removed in the waste activated sludge line. Chemical phosphorus removal produces an inert suspended solid in the activated sludge basins, resulting in an overall volume increase to maintain biological treatment functionality.

3.4.7 SLUDGE HANDLING

As the treatment bacteria in the activated sludge process grow, an equivalent amount of mixed liquor must be removed to maintain the mass of biomass in the system. This excess mixed liquor is removed as waste activated sludge. The WAS is transferred to a sludge storage tank, where it is fed to a centrifuge for thickening. The same centrifuge will be used for thickening both WAS and digestate from the anaerobic digester. Cake from the centrifuge will discharge into the existing sludge conveyance system and hoppers for off-site disposal. Nutrient-rich centrate from the sludge thickening process will be sent back to the influent equalization chamber for further treatment.

3.4.8 WASTE COLLECTION

White waste is collected mainly at the existing wastewater screen and at the oily water screen. Some other waste streams on-site may be sent to the anaerobic digester on a periodic basis, as required. The existing main wastewater screen and oily water screen will be retained for use in the process. A new reversing conveyor will be installed, which will allow screenings to be directed either to the hammermill for maceration or to a truck for disposal.

3.4.9 WHITE WASTE ACIDIFICATION

The anaerobic digestion process begins with the processing of the white waste and other digestible materials into a slurry with a concentration of approximately 8 - 12%. White waste from the screens is directed into a feed hopper above the hammermill, which macerates the white waste to form a paste. To maintain the slurry concentration, typically dilution water or other materials are added to reduce the solids concentration leaving the hammermill. In this case, primary clarifier sludge along with the liquid production waste stream will be pumped into the hammermill feed hopper to reduce the solids concentration leaving the hammermill to approximately 8%. The material discharged from the hammermill is continuously pumped to the acidification tank for pre-acidification before being fed to the digesters.

The acidification tank feed pumps discharge at a fixed flowrate and dilution water connection is added to the hammermill based on slurry pump discharge pressure. As the slurry is shear thinning material, the discharge pressure on the acidification tank feed pumps will be higher at start-up and will decrease as the velocity in the pipe increases. As the slurry concentration is expected to be around 8% with the primary clarifier sludge, it is anticipated that dilution water would be required at start-up and flushing only.

The acidification tank is continuously mixed and provides an environment that allows for partial breakdown of the material to be digested, making the COD more accessible and increasing COD destruction and biogas yielding the digesters.

3.4.10 ANAEROBIC DIGESTER

The anaerobic digester is fed from the acidification tank in batches and is continuously mixed by a jet mixing system. Jet mixing pumps are mounted outside the digester on an equipment pad and discharged through a jet mixing header inside the digester. Heat is added to the mixing stream to maintain temperature in the digester, as well as caustic, micronutrients and a defoaming agent, as needed. COD in the waste material is digested and converted into biogas, which is collected in the headspace of the digester tank.

The digester will have a double membrane roof, which collects biogas and discharges it to the biogas handling system. A fresh air blower is used to pressurize one side of the membrane, which maintains pressure on the inside of the digester and pushes biogas out and into the biogas piping. The gas collection cover has an emergency pressure relief to prevent damage to the internal membrane.

Digestate pumps remove digestate from the digester in batches, in coordination with the feed pumps. Typically, digestate is removed before the digester is fed from the acidification tank. Digestate is sent to the sludge holding tank, where it will be dewatered.

3.4.11 BIOGAS HANDLING

Biogas from the anaerobic digester and UASB will be combined into a common handling system for treatment and utilization in power generation or as a natural gas substitute in plant boilers. The biogas from the digester and UASB will be analysed and measured individually, before being combined in a common header and drawn through a condensate trap to remove excess moisture. Biogas blowers will feed the combined biogas to the H₂S scrubber system for desulfurization. Following the scrubber, the biogas will be discharged either to the factory boilers or to a biogas engine. A flare system is provided for emergency combustion or when biogas production exceeds demand.

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3.5 DIESEL STORAGE TANK

The diesel will be stored in a liquitainer containerised tank. The liquitainer system consists of a containerised tank housed within an International Organization for Standardisation (ISO) container. This tank is specifically built to hold diesel fuel safely while being transported or stored. The tank itself is typically made from high-quality materials, such as stainless steel or carbon steel, to resist corrosion and ensure that the diesel remains uncontaminated. These materials are chosen for their ability to handle the chemical properties of diesel fuel without risk of degradation. Baffles or anti-surge devices might be installed inside the tank to prevent fuel from sloshing around during transit or storage. This minimises the risk of accidents and ensures that the tank stays stable during movement.

Diesel is a flammable substance, so the liquitainer system is equipped with multiple safety features to ensure secure storage and transportation, including:

- Pressure relief valves: These valves help regulate internal pressure within the tank, ensuring it does not build up to dangerous levels due to changes in temperature or other factors;
- Explosion-proof construction: The tank and container are often designed to be resistant to sparks or static discharge, minimizing the risk of ignition; and
- Leak-proof design: The tank is equipped with high-quality seals and valves to prevent any leakage of diesel during storage or transit. The ISO container itself provides an additional level of protection, reducing the risk of spills.

Loading and Unloading Diesel

- Loading: Diesel will be loaded into the liquitainer tank via specialised pipelines or pumps. This is typically done using a fuelling station setup with an appropriate filtration system to prevent contamination; and
- Unloading: When unloading, diesel will be transferred from the tank using gravity or a pump system. The container has drain valves at the bottom or top, and the diesel can be pumped or drained into another storage tank or fuel distribution system.

Environmental and Spill Prevention

- The containerised design of the liquitainer offers an additional layer of protection against environmental contamination. If the tank experiences damage or leakage, the sealed ISO container around it will help contain any spill, preventing contamination of the surrounding environment; and
- Spill containment systems may also be built into the container itself, such as secondary containment trays that catch any minor leaks or drips.

Refer to Figure 3-6 and Figure 3-7 for the diesel tank design drawings.

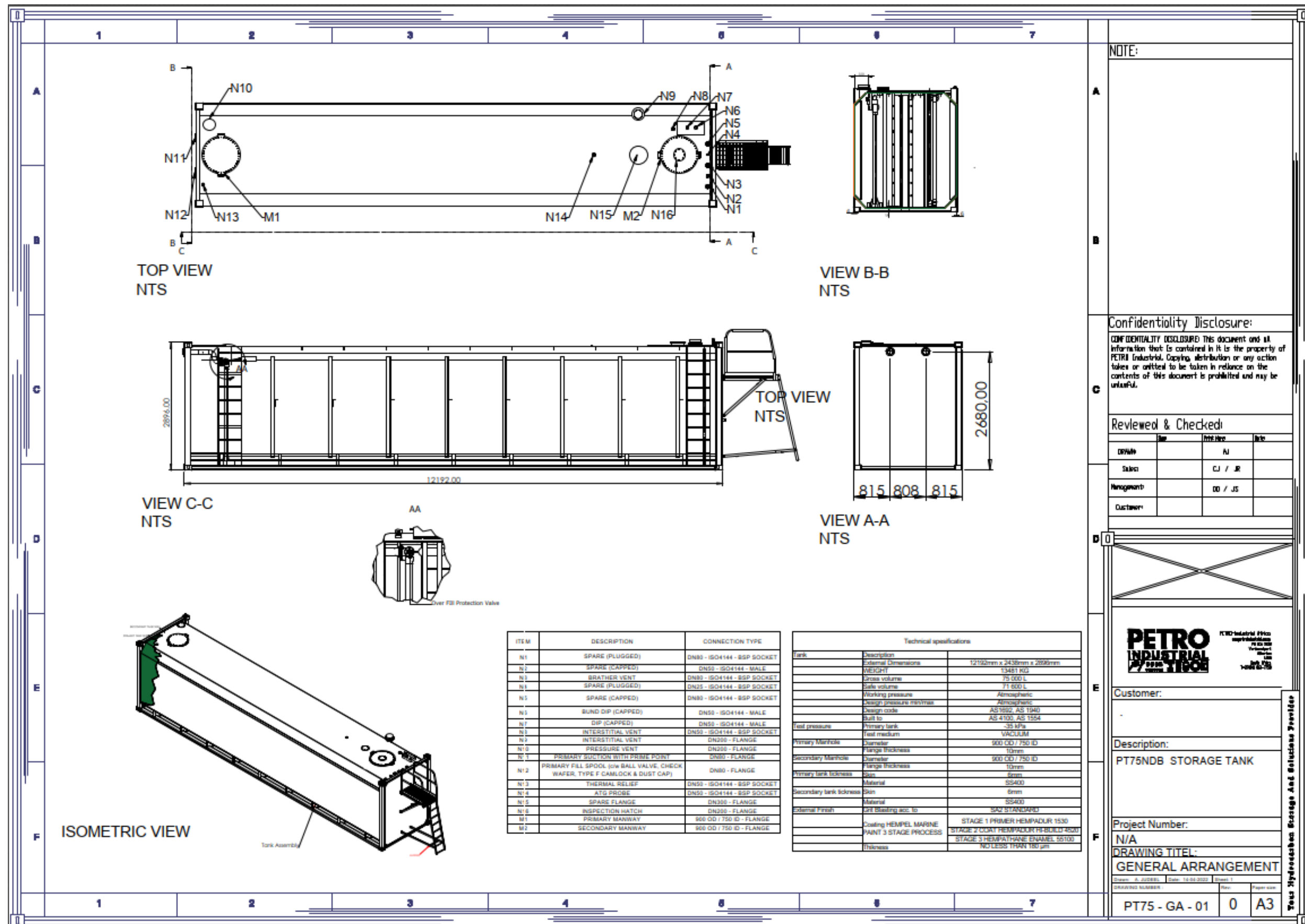


Figure 3-6 - Diesel Tank Design

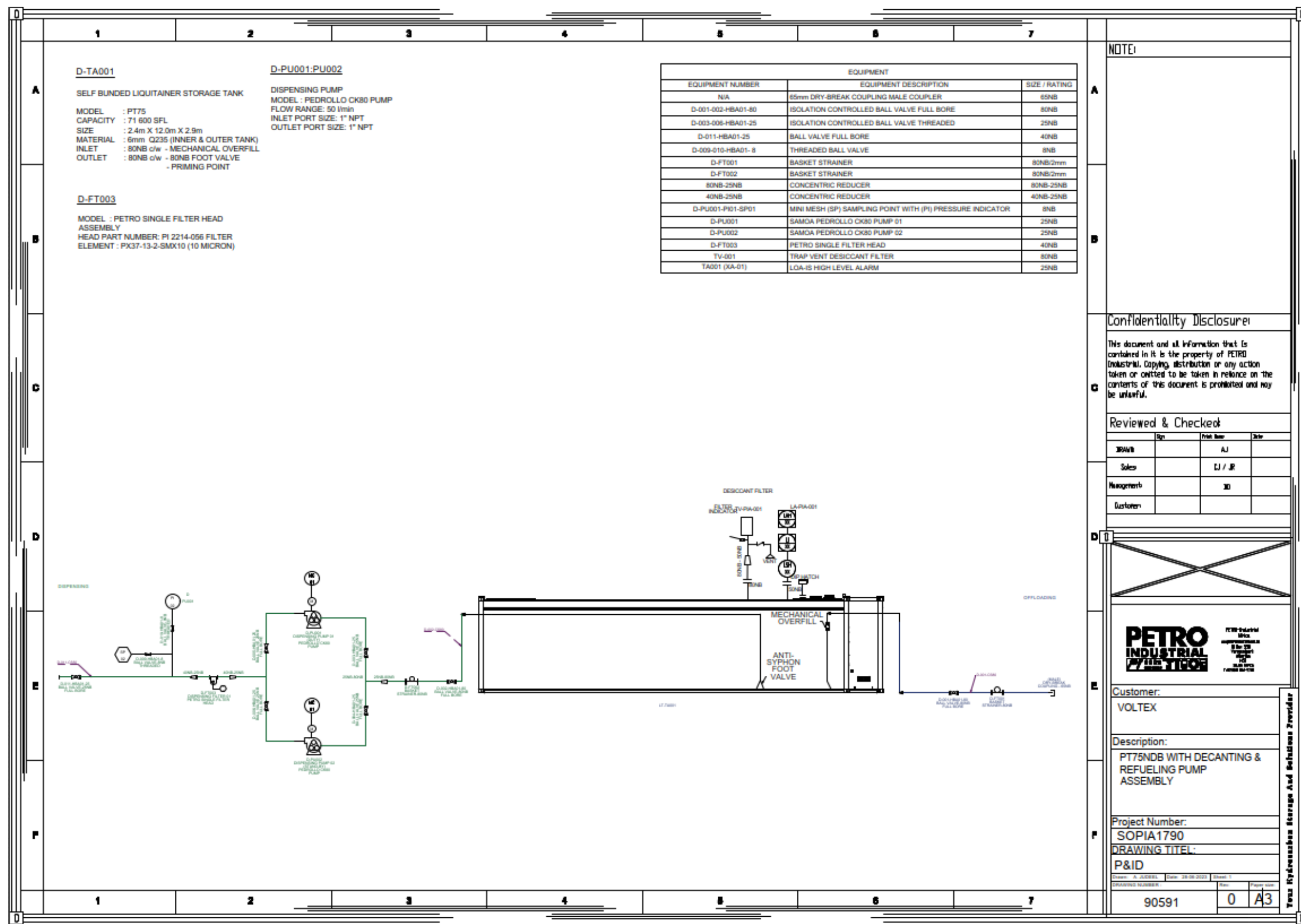


Figure 3-7 - Diesel Tank Design

3.6 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

3.6.1 CONSTRUCTION PHASE

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

3.6.1.1 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 EMP 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.

3.6.1.2 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.

3.6.1.3 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.

3.6.1.4 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.

3.6.1.5 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.

3.6.1.6 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.

3.6.1.7 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.

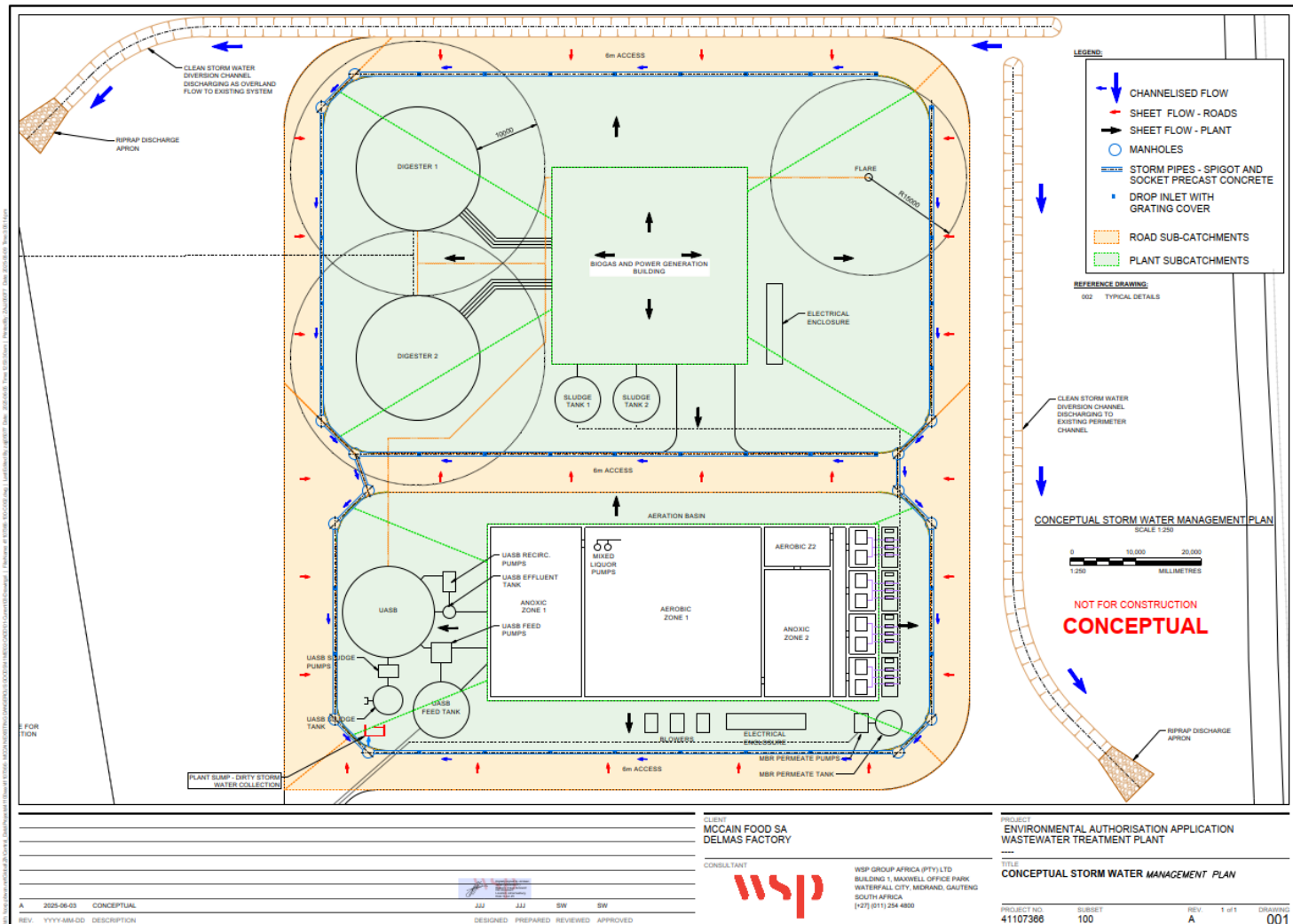


Figure 3-8 - Conceptual Storm Water Management Plan for the WWTP

3.6.2 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.

3.7 NEED AND DESIRABILITY OF THE PROJECT

The DFFE's Guideline on Need and Desirability (GN R.891 of 2014) emphasises that while national strategies and policies are important for the development of the economy, they also need to address strategic issues such as climate, food security and the sustainability of natural resource supply and the condition of South Africa's ecosystem services. It is for this reason that the overarching framework for assessing the need and desirability of developments is adopted at the policy level by identifying and promoting the activities/industries/developments that civil society needs (DEA, Department of Environmental Affairs (DEA) Guideline on need and desirability (GN R.891 of 2014), 2014).

The Guideline also notes that at the project level (e.g., within the BA process), the "need" and "desirability" of a project should be reflected in the content of local and regional plans, frameworks and strategies. Considering the above, the purpose of this part of the report is to outline the necessity and desirability of the proposed project, highlighting how it fits into the strategic framework of global, national, regional and local development policies and programmes, as well as wider societal requirements (where applicable).

The planned expansion of the McCain Delmas Plant is founded on both long-term strategic development goals and the immediate operational demand of the site. The Project is centred on upgrading the WWTP and expanding the diesel storage capacity, with the objective of maintaining production, and increasing operational efficiency and sustainability throughout the facility. These improvements are crucial for maintaining ongoing compliance with South African environmental regulations and socio-economic standards, and improving operational resilience, while ensuring long-term viability of the facility (DWS, 2016; DFFE, Department of Forestry, Fisheries and the Environment (DFFE) South Africa's energy transition and climate response policy instruments, 2022).

In doing so, the project responds directly to the Guideline's emphasis on balancing economic development with the sustainable use of natural resources and the protection of ecosystem services.

3.7.1 NATIONAL POLICY AND PLANNING FRAMEWORKS

South Africa has several national policies and planning frameworks that promote the sustainable use of resources. The sections below highlight those national policy and planning instruments that are directly applicable to the proposed project.

3.7.1.1 National Development Plan (NDP) 2030

The project is justified by the alignment with key national development goals, particularly eradicating poverty and improving water and sanitation, as outlined in South Africa's NDP 2030. The WWTP addresses strained local water infrastructure, improves public health, and supports sustainable operations by enabling water reuse and safeguarding resources. Expanding diesel storage ensures reliable energy for food processing, which is vital for food security and uninterrupted local economic activity (National Planning Commission, 2012). These initiatives also contribute to job creation, support the Victor Khanye Local Municipality's strategic objectives, and position McCain as a responsible corporate citizen committed to long-term environmental and socio-economic sustainability in the Delmas area.

3.7.1.2 National Food and Nutrition Security Policy Framework and the National Food and Nutrition Security Plan 2018–2023

South Africa's food security strategy is shaped by the National Policy on Food and Nutrition Security (2013) and the National Food and Nutrition Security Plan 2018-2023. These frameworks prioritise food security, resilient production systems, efficient agro-processing, and the protection of vital resources such as water and energy to support food supply chains (DAFF, 2013; DAFF, 2018).

The project supports South Africa's food security by ensuring an established agro-processing facility remains operational. Upgrading the WWTP improves water efficiency and environmental outcomes, while energy enhancements help maintain consistent production. In this way, the project contributes to national efforts to strengthen food system resilience and safeguard food security in the face of increasing resource constraints and climate-related risks.

3.7.1.3 National Climate Change Policy Framework (2011)

This framework guides South Africa's efforts to cut greenhouse gas emissions, boost resilience to climate risks and shift toward a low-carbon economy. It highlights the need for industries to improve energy efficiency and adopt cleaner technologies (DEA, 2011).

Upgrading the WWTP aligns with these goals by introducing anaerobic digestion and biogas generation, reducing reliance on coal-based energy and lowering Scope 1 and 2 emissions at the Delmas Plant site. Improved on-site energy resilience also helps the facility adapt to potential energy supply disruptions from climate variability.

3.7.1.4 National Water Policy Framework and National Water Resource Strategy

South Africa's National Water Policy Framework and the National Water Resource Strategy (NWRS-3) emphasise the need for efficient water use, protection of water resources and the reduction of pressure on municipal water and wastewater infrastructure in a water-scarce national context (DWS, 2016). Key policy objectives include improving water-use efficiency in industrial processes, promoting wastewater reuse where practicable, and safeguarding surface water and groundwater resources from pollution.

The project directly addresses these objectives by improving the treatment and management of effluent generated at the facility, enabling water reuse, and potentially reducing reliance on municipal wastewater infrastructure.

3.7.1.5 National Energy Policy (1998) and Energy Transition Objectives (2021-present)

National energy policy recognises the need to improve energy security, reduce reliance on coal-based energy sources and diversify the national energy mix through increased use of renewable and alternative energy sources (DME, 1998; DFFE, Department of Forestry, Fisheries and the Environment (DFFE) South Africa's energy transition and climate response policy instruments, 2022). These objectives are driven by both environmental considerations and the need to enhance resilience in the context of ongoing electricity supply constraints.

The project supports these national energy objectives through the generation and utilisation of biogas as an alternative energy source, which can be used to generate power or displace coal in on-site boilers. This contributes to reduced dependence on coal-based energy, improves operational resilience, and supports South Africa's broader energy transition priorities.

3.7.2 PROVINCIAL, DISTRICT AND LOCAL SPATIAL PLANNING FRAMEWORKS

On a regional and local scale, the project is consistent with existing development policies and frameworks. The responsible management of wastewater and energy resources is achieved within the current footprint of the Delmas Plant, eliminating the need for additional land. This approach avoids unnecessary land transformation and supports the efficient use of existing industrial land.

In addition to development and economic planning frameworks, some strategic spatial and environmental planning instruments apply to the project. These instruments guide development suitability, environmental management priorities and sustainable land-use decision-making and are relevant to the consideration of need and desirability.

The expansion also fosters local employment opportunities and skills development through routine operations, maintenance activities, and construction activities. The project is also aligned with broader efforts to stimulate industrial growth, promote environmental stewardship and deliver social benefits to the surrounding community.

The overarching vision for the McCain Delmas expansion is to set a benchmark for sustainable industrial practice, striking a balance between economic growth, environmental protection, and social responsibility.

The following sub-sections will outline the relevant provincial and local policy and planning frameworks.

3.7.2.1 Mpumalanga Provincial Growth and Development Strategy (PGDS) (2013–2030)

The PGDS identifies agriculture and agro-processing as key industries with potential for high economic growth and job creation in the province. The strategy emphasises economic growth, poverty alleviation, and employment, while also prioritising environmental sustainability and the preservation of natural resources (Mpumalanga Provincial Government, Mpumalanga provincial growth and development strategy 2013–2030, 2013). This project directly contributes to these pillars by expanding agricultural output, supporting food security, industrial investment, job opportunities and responsible resource management.

3.7.2.2 Mpumalanga Provincial Spatial Development Framework (PSDF)

The PSDF provides strategic spatial direction for development across the province, including the identification of priority economic nodes and corridors, and promotes the consolidation of development within existing industrial and economic areas (Mpumalanga Provincial Government, 2019). The PSDF emphasises the efficient use of existing infrastructure and the avoidance of unnecessary land transformation.

The proposed development is located within an established industrial footprint at the McCain Delmas Plant site and does not require additional land take or expansion into undeveloped areas. As such, the project is consistent with the spatial intent of the PSDF.

3.7.2.3 Mpumalanga Environmental Management Framework (EMF)

EMFs guide sustainable development by highlighting environmental sensitivities and land-use priorities in specific areas. They promote informed decisions and enable development with proper environmental measures (MDARDLEA, 2019).

The project upgrades infrastructure within an existing industrial site to improve wastewater management and energy resilience, supporting EMFs' goals of reducing risk and encouraging sustainable resource use. Additionally, according to the DFFE Environmental Screening Tool, the project area falls within relevant EMF zones (DFFE, 2025). The planned upgrades enhance wastewater management and operational controls, aligning with EMFs' objectives for lowering environmental risks, boosting efficiency, and fostering sustainable land use.

3.7.2.4 Nkangala District Spatial Development Framework and District Development Model (DDM)

At a district level, the Nkangala District Spatial Development Framework and the DDM (One District, One Plan) emphasise coordinated infrastructure investment, economic development and support to key productive sectors, including agriculture and agro-processing. These instruments promote alignment between national, provincial and local priorities and seek to strengthen regional economic resilience (Nkangala District Municipality., 2020).

The proposed expansion supports these objectives by reinforcing an existing agro-processing operation, improving infrastructure resilience, and contributing to regional food security and employment.

3.7.2.5 Victor Khanye Local Municipality (VKLM) Integrated Development Plan (IDP)

The VKLM IDP highlights the importance of Local Economic Development (LED), job creation and poverty alleviation. The municipality aims to promote food security and support farmers through various programmes, including infrastructure development (Victor Khanye Local Municipality, 2023). The proposed projects align with the IDP's objective of promoting agrarian transformation and rural development to create vibrant, equitable rural communities with food security for all. The project also aligns with goals for sustainable water management, industrial development, poverty reduction, and improved infrastructure.

3.7.2.6 Victor Khanye Local Municipality Spatial Development Framework (SDF)

The VKLM Spatial Development Framework provides spatial guidance for development within the municipality, with an emphasis on the consolidation of industrial development within existing serviced areas, efficient land use, and environmental sustainability (Victor Khanye Municipality, 2020).

The project is confined to the existing McCain Delmas Plant site and is compatible with the industrial land-use intentions contained in the municipal SDF, supporting the continued utilisation of existing industrial land and infrastructure.

3.7.2.7 Highveld Priority Area Air Quality Management Plan

The project is located within the Highveld Priority Area (HPA), which has been declared in terms of the NEM:AQA due to elevated air pollution levels. The Highveld Priority Area Air Quality Management Plan (AQMP) provides strategic direction for the reduction of air pollution and promotes improvements in industrial efficiency, cleaner production technologies and the transition towards lower-emission energy sources (DFFE, 2025; WSP, 2025b).

The proposed upgrading of the WWTP, including energy efficiency improvements and the potential displacement of coal through the use of biogas, is aligned with the objectives of the AQMP. These measures support broader efforts to reduce emissions, environmental performance and enhance operational resilience within the Priority Area.

3.7.3 MCCAIN CORPORATE POLICY AND STRATEGIC FRAMEWORK CONTEXT

In addition to alignment with national policy frameworks, the project is consistent with McCain Foods' Global Sustainability Strategy and Global Environmental Policy, which guide environmental performance across all operational facilities. These corporate frameworks emphasise resource-efficient operations, reductions in greenhouse gas emissions, improved water and energy efficiency, and responsible wastewater and waste management. The proposed upgrading of the WWTP and energy-related infrastructure at the McCain Delmas Plant gives practical effect to these commitments at a site level, reinforcing the desirability of the project and its contribution to broader national sustainability objectives.

3.7.3.1 McCain's Global Sustainability Strategy

Beyond meeting South African regulatory requirements, the expansion is firmly rooted in McCain's global sustainability strategy, which is built upon four core pillars: Smart and Sustainable Farming, Resource-Efficient Operations, Good Food, and Thriving Communities. Through these pillars, McCain aims to minimise environmental impact by boosting resource efficiency, reducing waste, and encouraging agricultural practices that support soil health and biodiversity (McCain Foods, 2024a).

To realise these goals, McCain has established clear targets to reduce greenhouse gas emissions, transition towards renewable energy sources, and adopt circular resource management across all its facilities, including Delmas.

The project specifically aligns with the McCain strategy to run Resource-Efficient Operations, given that the Project is associated with improved water use efficiency, ceasing the use of coal, achieving a reduction in Scope 1 and 2 emissions, and the use of renewable energy.

The following provides a summary of the McCain commitments and the contribution to such through the implementation of the project.

Table 3-5 - McCain Resource Efficient Operation Commitments vs. Project Contribution – remains unchanged

McCain Resource Efficient Operation Commitments - McCain 2024 Sustainability Report	Project contribution to sustainability commitments
2025 – 15 % Improvement in water use efficiency in seven priority plants	Effluent arising from the McCain Delmas operation will be treated at the WWTP, producing water to a quality suitable for direct discharge or for plant use, thereby contributing to optimising water use.
Zero waste to landfill by 2025	The WWTP 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 (as would previously had been disposed of). Through the digestion process, a significant reduction in the volume of aforementioned waste will be achieved.
Cease use of coal by 2025 50% absolute reduction in GHG emissions (Scope 1 & 2) and 100% renewable electricity by 2030)	The anaerobic digester will convert the aforementioned waste into biogas, which can be used to either generate power or displace coal in the processing plant's boilers. This alternative renewable energy source will contribute to both a reduction in non-renewable energy and moving towards the 100% renewable electricity target.

3.7.3.2 McCain Global Environmental Policy

McCain Foods' Global Environmental Policy sets a company-wide framework for managing environmental risks, improving resource efficiency and supporting sustainable operations. The policy, guided by responsible stewardship and a Global Environmental Management System aligned with international standards, highlights efficient use of resources, reducing emissions, preventing pollution, minimising landfill waste, complying with laws and continually improving performance through regular reviews (McCain Foods, 2024b).

The Project aligns with these principles by upgrading wastewater treatment to boost environmental outcomes, water management and energy efficiency at an existing facility, thereby advancing McCain's commitment to sustainability on both site-specific and company-wide levels.

3.7.3.3 McCain South Africa Sustainability Commitments

McCain Foods South Africa applies the company's global sustainability strategy through site-specific initiatives that address local environmental, social and economic priorities. The main focus areas are Smart and Sustainable Farming, Resource-Efficient Operations, Good Food and Thriving Communities (McCain Foods South Africa, 2023).

For this Project, McCain's resource-efficient operations commitments, such as improving water efficiency, reducing carbon emissions, minimising waste and upgrading infrastructure, which are especially relevant. These efforts aim to support long-term business continuity, reduce environmental impacts and advance national goals like food security and sustainable industry.

Expanding wastewater treatment at the McCain Delmas Plant directly supports these sustainability objectives by improving environmental performance and operational resilience, making the project well aligned with both company and national priorities.

3.7.4 SUMMARY OF NEED AND DESIRABILITY REQUIREMENTS AND APPROACH

The Guideline on Need and Desirability (GN R.891 of 2014) requires an assessment of whether a proposed activity represents the right time (“need”) and the right place (“desirability”) for the development being proposed. These considerations are intended to be addressed through the integrated findings of the environmental assessment rather than as a standalone exercise.

In this Basic Assessment Report (BAR), the need and desirability of the project have been addressed through the policy and planning context, site selection, impact assessment, specialist studies and alternatives considered. Table 3-6 below provides a summary mapping of the Guideline questions to the relevant sections of the report where these matters are addressed.

Table 3-6 - Integrated Consideration of Need and Desirability Requirements

Guideline Question (GN R.891 of 2014)	Summary of Response	Relevant Sections of the BA Report
NEED (Timing – “Right Time”)		
Is the proposed land use/activity provided for within the timeframe of applicable planning instruments such as the IDP and SDF?	The proposed expansion responds to current, identified operational requirements and is aligned with the planning horizons of applicable national, provincial and local policy and planning frameworks.	Section 3.7.1 (National Policy and Planning Frameworks); Section 3.7.2 (Provincial, District and Local Planning Frameworks)
Should the development/expansion occur at this time?	The project is driven by the need to maintain compliant and efficient wastewater management and improve energy resilience to support continued operations.	Section 3.7 (Need and Desirability of the Project); Section 3 (Project Description)
Does the community/area need the proposed activity (societal priority)?	The project supports food security, employment, and sustainable industrial activity, consistent with national and local development priorities.	Sections 3.7.1 and 3.7.2
Are sufficient services and infrastructure available, or will additional capacity be required?	The activity is located within an existing, serviced industrial facility.	Section 3 (Project Description – infrastructure and services); Section 8 (Impact Assessment)
Is the project part of, or supportive of, broader programmes addressing issues of national importance?	The project supports national priorities relating to water security, energy efficiency, emissions reduction and sustainable industrial development.	Section 3.7.1 (National Policy Frameworks); Section 3.7.2
DESIRABILITY (Placing – “Right Place”)		
Is the proposed activity the most appropriate use of the site?	The activity is confined to an existing industrial footprint and represents an upgrade of existing infrastructure rather than greenfield development.	Section 3 (Project Description); Section 3.7

Guideline Question (GN R.891 of 2014)	Summary of Response	Relevant Sections of the BA Report
Would the proposed development compromise the integrity of the municipal IDP or SDF?	The development is consistent with the spatial intent of applicable SDFs and does not undermine municipal spatial planning objectives.	Section 3.7.2 (Provincial, District and Local Spatial Planning Frameworks)
How will the activity impact on sensitive natural or cultural areas?	Potential impacts on the biophysical environment have been assessed through specialist studies and impact assessment, with mitigation measures identified where required.	Section 6 (Baseline Environment); Section 8 (Environmental Impact Assessment); Appendix D (Specialist Studies)
How will the activity impact on people's health and well-being (e.g. noise, odour, visual impacts)?	Potential impacts on surrounding receptors have been assessed as part of the impact assessment, with appropriate mitigation measures proposed.	Section 8 (Environmental Impact Assessment); Appendix E (Environmental Management Programme)
Is the proposed activity the best practicable environmental option for the site?	Alternatives, including activity and design considerations, have been assessed, with the preferred option selected based on environmental, technical and operational considerations.	Section 4 (Project Alternatives)

4 PROJECT ALTERNATIVES

The EIA Regulations require that the BA process must identify and describe alternatives to the proposed activity that were considered, or the motivation for not considering alternatives. Different types or categories of alternatives could be considered, including different locations, site locations, technology types, and project layouts. It is not always possible to provide alternatives to various categories, as project designs and locations may already be located strategically or may be too costly for the project to proceed.

4.1 SITE ALTERNATIVES

The proposed project will be located within the current footprint of the McCain Delmas Plant facility. No site alternatives for the WWTP or the diesel storage expansion can be provided or considered, due to the following reasons:

- McCain Delmas is an existing facility;
- There is sufficient space within the McCain Delmas Plant site to develop the WWTP without expanding beyond the boundaries of the existing facility, and this infrastructure needs to be constructed within proximity to the existing McCain Delmas Plant; and
- Existing facility infrastructure will tie into the proposed expansion infrastructure, allowing for easy integration.

4.2 TECHNOLOGY ALTERNATIVES

Several technology alternatives for the WWTP were considered, as relevant to the various phases of the treatment process. The alternatives are presented in Table 4-1, including the key advantages and

disadvantages as well as the motivation for selecting the preferred alternative. The alternatives considered are:

- Primary treatment: Two technology options have been identified as either Covered Anaerobic Lagoons or Upflow Anaerobic Sludge Blanket Reactors (UASB).
- Phosphorous removal: Two technology options for removal include use of iron/aluminium or use of specialised bacteria (biological).
- Activated sludge process: Two technology options have been considered for the control of the mass of biomass in the treatment systems, namely gravity settling in a secondary clarifier and applying a Membrane Bioreactor (MBR).
- Biogas handling: As a worst-case scenario, biogas will be discharged to a new biogas engine, as such, the biogas engine will be located alongside the biogas and power generation building of the WWTP.

Table 4-1 – WWTP Technology alternatives

WWTP Component	Alternative technologies	Advantage	Disadvantage	Preferred Option
Primary anaerobic treatment alternatives	Covered Anaerobic Lagoons	<ul style="list-style-type: none"> Produces renewable energy (biogas); Reduces odour and greenhouse gas emissions; Lower operating cost compared to mechanical systems; and Suitable for large volumes of high-strength wastewater. 	<ul style="list-style-type: none"> Requires large land area; Not suitable for low-strength or highly diluted wastewater; May need post-treatment for nutrient removal or pathogen control; and Temperature-sensitive (microbial activity slows in cold climates unless heated). 	-
	Upflow anaerobic sludge blanket reactors (UASB)	<ul style="list-style-type: none"> Compact design – requires much less space than lagoons; Energy-efficient – no need for aeration; Produces biogas – can be captured and used; Low sludge production; and Can handle high organic loads. 	<ul style="list-style-type: none"> Sensitive to temperature (less effective in cold climates); Needs skilled monitoring and maintenance; Start-up period can be slow (several weeks/months to develop good sludge granules); and Does not remove nutrients or pathogens and often needs post-treatment. 	Preferred option: <ul style="list-style-type: none"> Less space required; Energy efficient; and Handles high organic loads.
Phosphorus removal	Iron or Aluminium	<ul style="list-style-type: none"> Aluminium is advantageous in low-alkalinity water because it raises alkalinity and requires lower dosages, producing less chemical sludge; and Iron is cost effective and readily available. 	<ul style="list-style-type: none"> Sludge production that requires dewatering; and Need for careful chemical dosing. 	Preferred option: <ul style="list-style-type: none"> Most effective process

WWTP Component	Alternative technologies	Advantage	Disadvantage	Preferred Option
	Biological	<ul style="list-style-type: none"> Reduced chemical costs; and Lower sludge production. 	<ul style="list-style-type: none"> Uses specialised bacteria; and Risk of poor performance. 	-
Activated sludge process	Gravity settling in a secondary clarifier	<ul style="list-style-type: none"> Effluent quality may not meet environmental discharge or plant requirements and therefore may require additional treatment; Lower initial capital costs; and Lower energy consumption. 	<ul style="list-style-type: none"> Requires larger development footprint; Operates at lower mixed liquor suspended solids concentration; Performance can be impacted by variable flow rates or poor sludge settling characteristics; and Produces great quantity of excess sludge. 	-
Activated sludge process	Membrane bioreactor system	<ul style="list-style-type: none"> Provides a positive barrier to solids, eliminating the possibility of upset conditions due to variable flow or changes in bacteria growth in the activated sludge system; Allows for a significantly higher influent mixed liquor suspended solids concentration, reducing the required size of the activated sludge system; and Effluent quality would allow for environmental discharge or direct feed into a water recycle system with no modifications. 	<ul style="list-style-type: none"> More operationally complex and requires additional infrastructure, such as back pulse pumps and air scour blowers; Relies on vendor-supplied membranes, which will need to be periodically maintained and replaced; and Cannot operate in low- or no-power conditions; untreated effluent from the activated sludge system would discharge by gravity to a containment tank. 	<p>Preferred option:</p> <ul style="list-style-type: none"> Allows for positive removal of biomass from the effluent via filtration and also allows the system to operate at higher biomass concentrations, thereby making the system smaller.
Biogas handling	Power generation	<ul style="list-style-type: none"> Reduced electricity consumption for the plant. 	<ul style="list-style-type: none"> Gas engine will generate noise; and Higher operational costs. 	-

WWTP Component	Alternative technologies	Advantage	Disadvantage	Preferred Option
	Replacement fuel for on-site boilers	<ul style="list-style-type: none"> ▪ Limited additional infrastructure required; ▪ Reduced dependence on coal. ▪ Replacement of coal as a fuel source for the boilers will reduce greenhouse gas emissions and air pollution; and ▪ Lower operational costs. 	<ul style="list-style-type: none"> ▪ May lead to corrosion of boilers, if H₂S scrubber system for desulfurization is not optimally operating 	<p>Preferred option:</p> <ul style="list-style-type: none"> ▪ The environmental benefits of replacing coal at the McCain Delmas Plant make this option the preferred.

4.3 NO-GO ALTERNATIVE

The “do-nothing” alternative will be the status quo. The project activities, i.e. the expansion of the fuel storage tank and the WWTP will not occur, should the No-Go alternative be implemented, and no potential negative or positive impacts from such proposed activities will arise. The fuel storage expansion is an operational requirement to allow for sustainable business continuation and will negatively impact the McCain Delmas operation if it does not proceed.

As per the Need and Desirability (refer to Section 3.7), benefit will arise from the WWTP as aligned with and contributing to McCain’s Sustainability Pillars of resource efficient operations. This includes treatment of wastewater to a standard suitable for plant use or discharge, and generation of biogas (a renewable energy source to be used within the McCain Delmas plant operation) through conversion of high COD waste material.

5 REGULATORY FRAMEWORK

This section details the regulatory framework for the proposed project.

5.1 LEGISLATIVE REQUIREMENTS

5.1.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

In terms of Section 24 of the Constitution of South Africa, 1996 (No. 108 of 1996) (the Constitution),

“Everyone has the right:

a) to an environment that is not harmful to their health or well-being; and

b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that;

i. Prevent pollution and ecological degradation;

ii. Promote conservation; and

iii. Secure ecologically sustainable development and use of natural; resources while promoting justifiable economic and social development”.

The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated in order to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld in an on-going basis throughout the country. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.

The NEMA was gazetted to give specific effect to these rights and provides for the incorporation of environmental considerations in decision-making. It applies alongside the State’s responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution, together with the basic needs of categories of persons disadvantaged by unfair discrimination.

5.1.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT 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.

5.1.2.1 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 only (see Table 5-1); thus, a BA process must be undertaken.

Table 5-1 – Triggered activities in accordance with the EIA Regulations

Listing Notice	Activity	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	Activity	Relevance to the project
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.

5.1.3 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 offensive⁷ 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.

5.1.3.1 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.

5.1.3.2 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).

5.1.3.3 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).

⁷ 'Offensive odour' is defined by NEM:AQA as any smell which is considered to be malodorous or a nuisance to a reasonable person.

5.1.3.4 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.

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 5-2 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 5-2 - South African National Ambient Air Quality Standards

Pollutant	Averaging Period	Concentration ($\mu\text{g}/\text{m}^3$)	Permissible Frequency of Exceedance ⁽²⁾
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			

5.1.3.5 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.

5.1.3.6 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.

5.1.4 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.

5.1.5 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 5-3 outlines Category C waste management activities which may require registration prior to commencement of the development.

Table 5-3 – 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.

5.1.6 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 7 for more details.

5.1.7 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.

5.1.8 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.

5.1.9 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 WTPP 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.

5.1.10 MAJOR HAZARD INSTALLATION REGULATIONS

The McCain Delmas facility 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.

5.2 POLICIES AND PLANS

Table 5-4 summarise key policies and plans as an outline of the governance framework for the project.

Table 5-4 – Applicable Policies and Plans

Applicable Plan	Description of Plan
Mpumalanga Biodiversity Conservation Plan (MBCP), 2006	<p>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 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>

Applicable Plan	Description of Plan
	<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. <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 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>

Applicable Plan	Description of Plan
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. ■ 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>

5.3 OTHER STANDARDS AND GUIDELINES

Table 5-5 – 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>

6 BASELINE ENVIRONMENT

The following chapter presents an overview of the physical, biological, and social environment in which the proposed project is located. It is important to gain an understanding of the project area and its surroundings, as it will provide for a better understanding of the receiving environment in which the project is being considered.

The description of the baseline environment is essential in that it represents the conditions of the environment before the construction of the WWTP and the diesel storage tank (i.e., the current, or status quo, environment) against which environmental impacts of the proposed project can be assessed and future changes monitored.

The area has previously been studied to some extent and is recorded in various sources of information. Consequently, some components of the baseline have been generated based on literature review. However, where appropriate, baseline information has been supplemented or generated by specialists appointed to undertake baseline and impact assessments for the proposed project. The sources of information for this chapter are provided below:

- Groundwater Impact Assessment (WSP, 2025a);
- Palaeontological Impact Assessment (Bamford, 2025);
- Ambient Air quality Impact Assessment (WSP, 2025b);
- Phase 1 HIA (APAC Consulting, 2025);
- Phase 1 Shallow Surface Geotechnical and Dolomite Stability Investigation, (Rockland Geoscience (Pty) Ltd, 2023);
- Soil, Land Capability and Agricultural Potential Assessment (Soil Advisory Services, 2025);
- Environmental Acoustic Assessment (WSP, 2025c);
- Social Impact Assessment (WSP, 2025d);
- Conceptual Storm Water Management Plan (WSP, 2025e); and
- Terrestrial Biodiversity Fauna and Flora Compliance Statement (WSP, 2025f).

The following characteristics of the receiving environment for the project area are described in Table 6-1 below.

Table 6-1 – Characteristics of the receiving environment

Receiving Environment	Characteristics
Physical	<ul style="list-style-type: none"> ■ Climate; ■ Air quality; ■ Environmental noise; ■ Geology; ■ Soil, land capability and agricultural potential; ■ Surface Water; and ■ Groundwater.
Biological	<ul style="list-style-type: none"> ■ Terrestrial vegetation; and ■ Terrestrial fauna.
Social and Economic	<ul style="list-style-type: none"> ■ Social; ■ Heritage; and ■ Palaeontology.

6.1 PHYSICAL ENVIRONMENT

6.1.1 CLIMATE

The key climate baseline conditions for this project are rainfall, temperature, wind speed and wind direction and are further discussed in McCain Delmas WWTP - Air Quality Report, (WSP, 2025b) (attached as Appendix D.3).

6.1.1.1 Temperature and rainfall

The region typically receives higher levels of rainfall during the summer months (December, January, and February), with drier conditions on average during the cooler, winter months (June, July, and August) (Figure 6-1 and Figure 6-2). The Delmas Air Quality Monitoring Station (AQMS) received an average rainfall of 23 mm, 11.5 mm and 24.5 mm of rainfall for 2022, 2023 and 2024, respectively with approximately 38.9% received during summer and 3.2% during winter. Summer temperatures for the region average 20.6°C while winter temperatures average 10.0°C.

The Weather Research and Forecasting (WRF) modelled data predicted an average of approximately 57.8 mm, 35.6 mm, and 20.8 mm of rainfall for 2022, 2023 and 2024, respectively, with approximately 32.9% received during summer and 2.1% during winter (June, July and August). Summer temperatures for the region average 21.8°C, while winter temperatures average 12.4°C according to the WRF modelled meteorological data over the 2022 – 2024 period. The WRF average summer temperature is 1.2°C higher than the Delmas AQMS, and the WRF average winter temperature is 2.4°C higher than the Delmas AQMS. Overall, these temperatures fall within range of each other, as such the WRF temperature data is considered site representative.

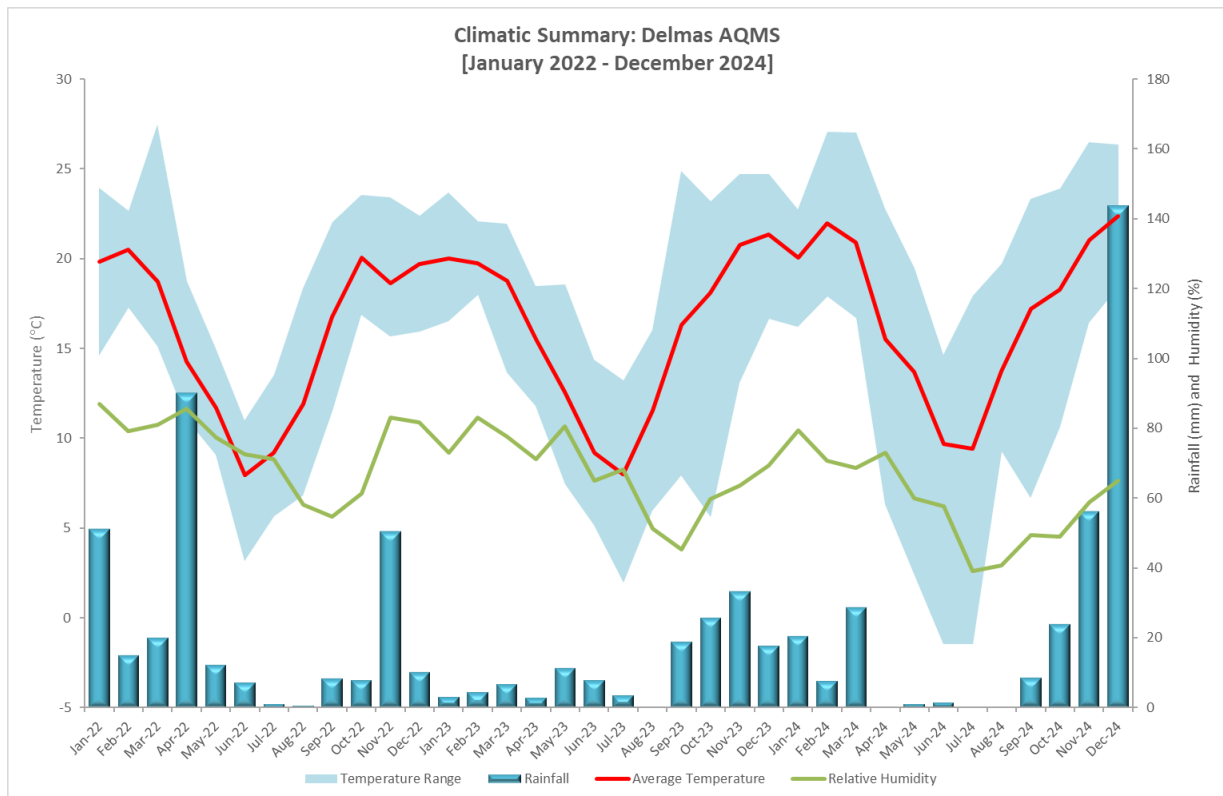


Figure 6-1 - Climatic summary using the Delmas AQMS data (2022 – 2024)

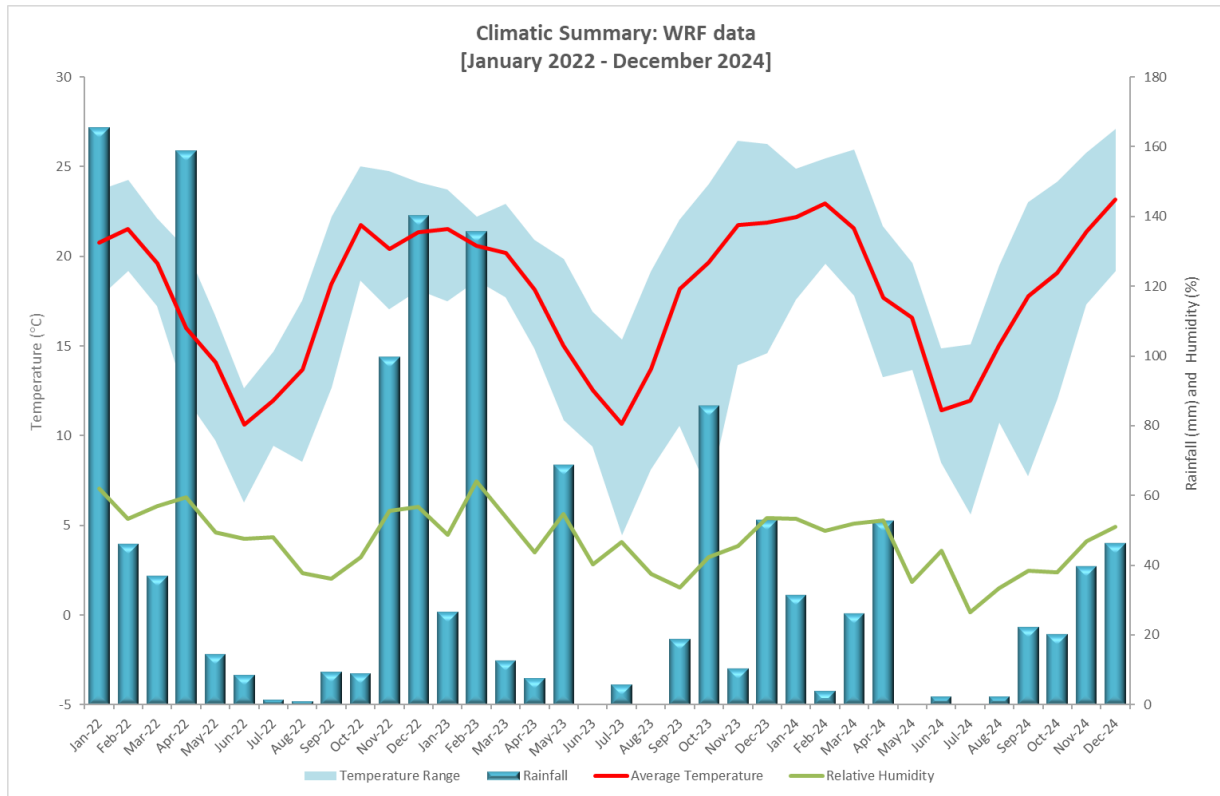


Figure 6-2 - Climatic summary using the WRF data (2022 – 2024)

6.1.1.2 Wind field

Period, seasonal, and diurnal wind roses for the data from the Delmas and the AEREMT-ready WRF dataset indicated the following for the period 2022 – 2024:

- Calm conditions for the period 2022 – 2024 occurred 9.7% of the time at the Delmas AQMS.
- Predominant winds originated from the northwest, south, northeast and west-northwest for the period. A maximum wind speed of 12.7 m/s and an average wind speed of 2.9 m/s was recorded. Wind speeds greater than 8 m/s occurred for 1% of the time for the period.
- Early morning winds (00:00 – 06:00) originated predominantly from the south. During the morning (06:00 – 12:00), when convective mixing is initiated, winds from the northeast dominated, with smaller components notable from the east, northwest, and south. Winds during the afternoon hours (12:00 – 18:00) dominated from the northwest and west-northwest. At night (18:00 – 24:00) winds from the northwest remained dominant, with an increase in winds from the northeast, north-northeast and south.
- During summer and spring, winds were predominant from the northwest, northeast and west-northwest. In autumn, the northwest and northeast components diminish in frequency, with the introduction of a dominant wind from the south. In winter the wind from the south remains dominant with smaller components from the south-southwest and northwest also notable.
- In comparison, the AERMET-ready WRF dataset exhibited predominant winds from the north and north-northwest for the period 2022 - 2024. The percentage of calm conditions were lower in the WRF dataset when compared to the Delmas AQMS data set (5.3% and 9.7% respectively).
- In the WRF dataset early morning winds (00:00 – 06:00) originated predominantly from the north and north-northeast. During the morning (06:00 – 12:00), when convective mixing is initiated, winds

from the north-northwest and north dominated. Winds during the afternoon hours (12:00 – 18:00) dominated from the northwest, west-northwest, north-northwest and north. At night (18:00 – 24:00) winds from the north-northwest remained dominant, with the other components diminishing in intensity.

- In the WRF dataset winds from the north and north-northwest dominate in summer and spring, whereas winds from the west-northwest and north dominate in autumn and winter. Smaller components from the northwest and west-northwest are also notable in winter.
- The WRF and Delmas AQMS illustrate notable temporal differences in wind patterns. This is likely to the poor data recovery from the Delmas AQMS (67.4%), where winds during the period are underrepresented.

6.1.2 AIR QUALITY

This section was supplemented with information from the Air Quality Report, (WSP, 2025b) (attached as Appendix D.3).

6.1.2.1 Description of Sources of Emissions within the Region

Within the Delmas area, several existing sources contribute to atmospheric emissions. These include the Thando Tech Botleng Colliery (~1.4 km west) and the Sephaku Cement Plant (~ 3.3 km south-southeast). Agricultural activities dominate the landscape surrounding McCain. In addition, vehicle exhaust emissions and domestic fuel burning within nearby communities further contribute to local air pollution.

6.1.2.2 Local Measurements

The nearest AQMS to McCain is the Delmas AQMS (~2.2 km southeast; 26.1403°S, 28.6970°E). Pollutants monitored by the AQMS include PM₁₀, SO₂, NO₂ and CO. Where hourly concentrations were provided in parts per billion (ppb), these were converted to micrograms per cubic meter (µg/m³) using ambient temperature and pressure as monitored by the station. The AQMS does not monitor PM_{2.5}, benzene, H₂S and NH₃, and no baseline data for these pollutants is otherwise available for this AIR. As such, PM_{2.5}, benzene, H₂S and NH₃ data is not presented.

Data recovery for the Delmas AQMS was below 90% for all pollutants during all years (2022, 2023 and 2024 respectively), below the minimum requirement of 90% as stipulated by the SANAS TR 07-03 (SANAS, 2012). Data recovery for SO₂ (2022) and CO (2022 and 2023) was between 57.6% and 77.2%, which is below the minimum requirement of 90% and although discussed in this section, must be viewed with caution.

Sulphur dioxide

In 2022, the 1-hour average sulphur dioxide (SO₂) concentrations at the Delmas AQMS station consistently remained below the 1-hour National Ambient Air Quality Standard (NAAQS) of 350 µg/m³, with no exceedances recorded, thereby maintaining compliance with the relevant air quality standards. The 24-hour average SO₂ concentrations exceeded the 24-hour (125 µg/m³) NAAQS in 2022 one time; however, remaining compliant as four exceedances of the 24-hour NAAQS are permitted per calendar year. Moreover, the annual average SO₂ concentrations for 2022 (15.0 µg/m³) remained below the annual average NAAQS (50 µg/m³), thus compliant with the respective NAAQS.

Carbon monoxide

Carbon monoxide (CO) monitoring data from the Delmas AQMS station for 2022 and 2023 revealed that both the 1-hour and 8-hour average CO concentrations consistently remained well below the National Ambient Air Quality Standards (NAAQS) thresholds of 10,000 µg/m³ and 30,000 µg/m³, respectively, with no exceedances recorded during these periods, indicating full compliance with the regulatory standards. Furthermore, the annual average CO concentrations were measured at 456.1 µg/m³ for 2022 and 557.6 µg/m³ for 2023. It is noteworthy that there is currently no prescribed annual average NAAQS for carbon monoxide, so these values are reported for informational purposes only.

6.1.2.3 Sensitive Receptors

Sensitive receptors include, but are not limited to, hospitals, schools, day-care facilities, elderly housing and convalescent facilities (USEPA, 2023; in WSP, 2025b). These are areas where the occupants are more susceptible to the adverse effects of exposure to toxic chemicals, pesticides and other pollutants. Extra care must be considered when dealing with pollutants in proximity to areas recognised as sensitive receptors. In line with this definition the residential, educational, and recreational land in the surrounding area is considered sensitive receptors.

For the air quality impact assessment (WSP, 2025b), sensitive receptors were selected using Google Earth Pro™. Identified sensitive receptors are displayed in Table 6-2 and Figure 6-3.

Table 6-2 - Sensitive receptors within a 5 km radius of McCain

ID	Description	Receptor Type	Latitude (°S)	Longitude (°E)	~Distance from Site Boundary (km)	Direction from Site
Rec 01	Farmstead 1	Farm	26.1108	28.6535	2.8	NNW
Rec 02	Farmstead 2	Farm	26.1194	28.6413	3.5	WNW
Rec 03	Farmstead 3 - Rossouw Jan A	Farm	26.1445	28.6366	4.4	WSW
Rec 04	Farmstead 4	Farm	26.1368	28.6511	2.7	WSW
Rec 05	Farmstead 5 - Wolmarans Boedary	Farm	26.1253	28.6646	1.1	WNW
Rec 06	Farmstead 6	Farm	26.1085	28.6680	2.1	NNW
Rec 07	Bernice Samuel Hospital	Medical	26.1524	28.6667	2.8	SW
Rec 08	Vezimfundo Primary School	School	26.0916	28.6942	3.8	NNE
Rec 09	Mafa Max Motoung Secondary School	School	26.1011	28.6997	3.1	NE
Rec10	Botleg Secondary School	School	26.1305	28.6981	1.4	ESE
Rec 11	Farmstead 7	Farm	26.1251	28.7195	3.6	E
Rec 12	Farmstead 8	Farm	26.1450	28.7072	3.1	SE
Rec 13	Swartklip Combined School	School	26.1672	28.6890	4.4	S
Rec 14	Informal housing settlement	Residential	26.1586	28.6694	3.3	SSW
Rec 15	Laerskool Delmas	School	26.1477	28.6811	2.1	S

ID	Description	Receptor Type	Latitude (°S)	Longitude (°E)	~Distance from Site Boundary (km)	Direction from Site
Rec 16	Farmstead 9	Farm	26.0906	28.6667	3.9	NNW
Rec 17	Botleng Mall	Commercial operations	26.1040	28.6789	2.2	N
Rec 18	Farmstead 10	Farm	26.1215	28.6790	0.3	N
Rec 19	Phaphamani Secondary School	School	26.1060	28.6901	2.1	NE
Rec 20	Simon Gondwe Sports Centre Boteng	Recreational	26.1209	28.6974	1.5	ENE
Rec 21	Acasisa Crescent Villas	Residential	26.1391	28.6703	1.3	SW
Rec 22	VKB	Commercial operations	26.1275	28.6837	0.08	S
Rec 23	Q4 Fuel Delmas	Commercial operations	26.1288	28.6786	0.08	S
Rec 24	Residence on Boekenhout St	Residential	26.1359	28.6791	0.8	S
Rec 25	Delpark Primary School	Residential	26.1398	28.6962	2.0	SE
Rec 26	Housing along R55	Residential	26.1365	28.7057	2.6	SE
Rec 27	Residence on Mlangeni St	Residential	26.1353	28.6923	1.4	SE
Rec 28	Residence East of McCain	Residential	26.1263	28.6913	0.7	E

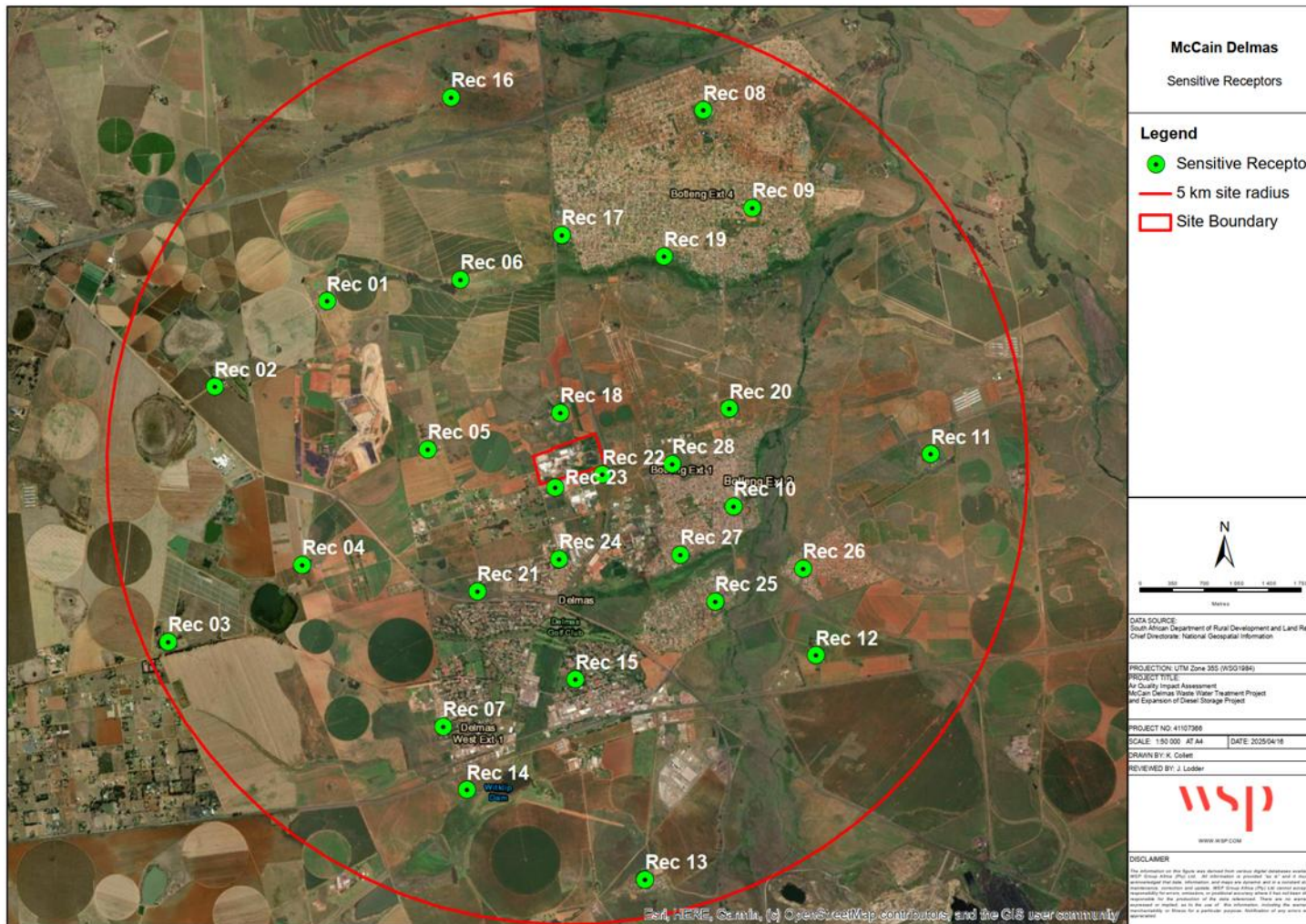


Figure 6-3 – Sensitive receptors within a 5 km radius of McCain Delmas

6.1.3 NOISE

This section was supplemented with information from the Environmental Acoustic Report, (WSP, 2025c) (attached as Appendix D.4).

Ambient noise level measurements were undertaken from 18 to 20 March 2025 at six off-site sensitive receptor locations, illustrated in Figure 6-4 and Table 6-3.

Table 6-3 - Noise monitoring locations

ID	Description	Latitude (°S)	Longitude (°E)	Distance from Site Boundary (m)	Direction from Site Boundary	SANS Classification*
Rec 01	Buhle Farmers' Academy	26.122389	28.679667	235	N	Urban C
Rec 02	Farmstead Resident 01	26.127583	28.675944	78	W	Urban C
Rec 03	Farmstead Resident 02	26.132475	28.678117	450	S	Urban C
Rec 04	Birchwood Ext. 4 Residential	26.135417	28.679194	780	S	Urban C
Rec 05	Delpark Residential 01	26.132194	28.690472	885	SE	Urban C
Rec 06	Delpark Residential 02	26.126306	28.689077	505	E	Urban C



Figure 6-4 - Receptor (noise monitoring) locations surrounding the site

The results of the monitoring indicated the following:

- Daytime monitoring Noise levels (LAeq) at one (Rec 05) of the six monitoring locations exceeded the guideline rating level as illustrated in Figure 6-5. Noise levels at all other locations were below the guideline rating level. From the daytime monitoring, it is evident that the current noise climate surrounding the McCain Delmas site is predominantly traffic-related, with influences from industrial activities at the site itself as well neighbouring industries. Natural sources like birds and insects are also evident.
- Noise levels at all receptor locations were compared to the typical night-time rating level for noise in urban (Class C) areas (45 dB(A) (Figure 6-6). Average LAeq noise levels at all six monitoring locations exceeded the guideline level. From the night-time monitoring, it is evident that the current noise climate surrounding the site is predominantly traffic-related, with natural sources (insects, birds and dogs) also dominant. Industrial activities (from both McCain and surrounding industries) also contribute to the night-time noise climate.

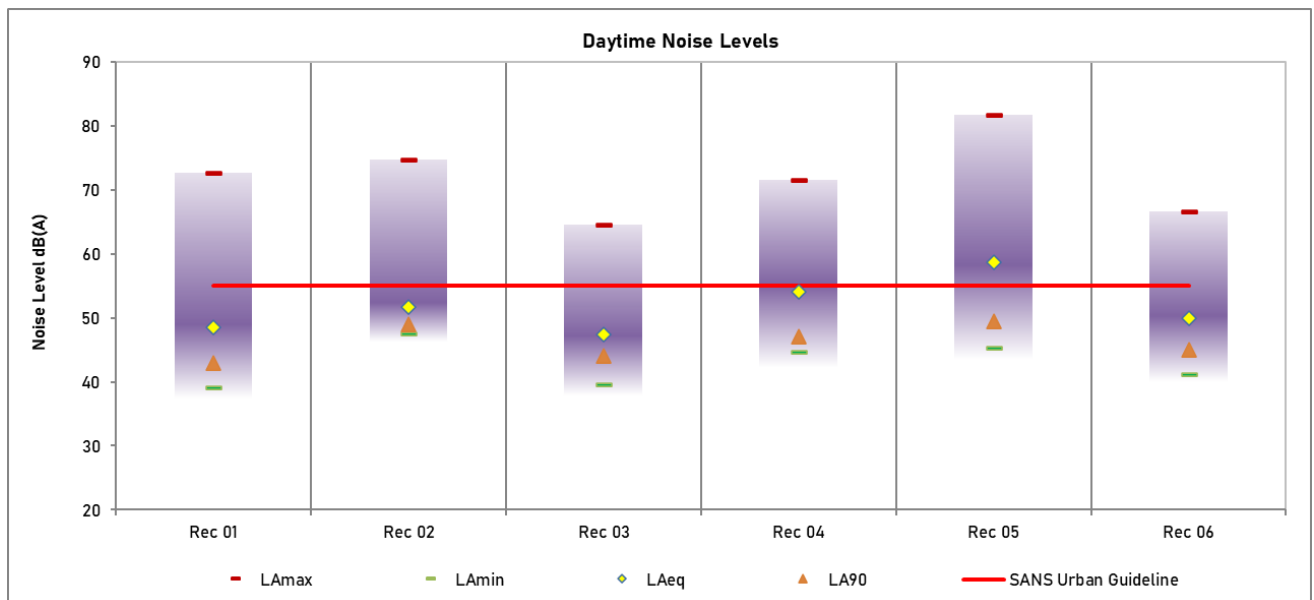


Figure 6-5 - Daytime monitored noise levels. LAeq (yellow diamond) is compared with the SANS guideline

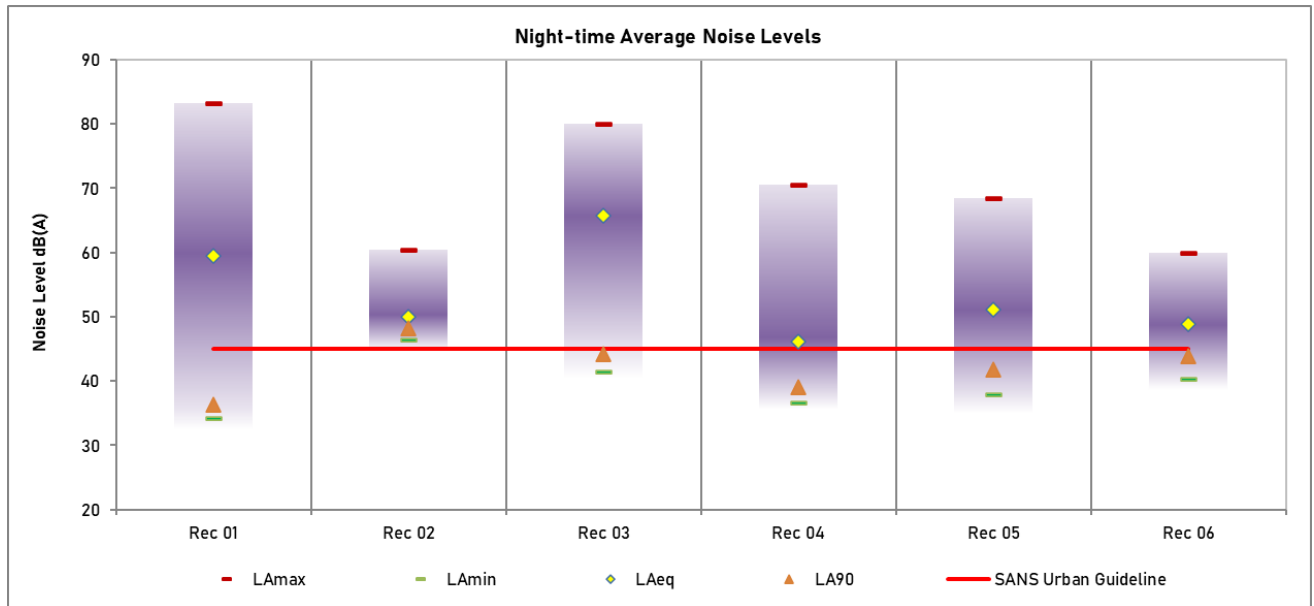


Figure 6-6 - Night-time average (logarithmic) monitored noise levels. LAeq (yellow diamond) is compared with the SANS guideline

6.1.4 GEOLOGY

This section was supplemented with information from the Groundwater Impact Assessment report, (WSP, 2025a) (attached as Appendix D.2).

The regional geological setting of the McCain's Delmas Site is illustrated in Figure 6-7. Although the indication is that the site lies directly on the Malmani Dolomite Subgroup (Vma), it is situated on an outlier of the Rooihogte Chert Formation (Vr). This phenomenon is explained in detail below.

The McCain Delmas Site is underlain by a chert/quartzite formation down to between 20 and 30 m (Figure 6-8). This formation is a remnant of the Rooihogte Formation present in the area, i.e., representing the "outlier". The Rooihogte Chert Formation is underlain by dolomite and (less prominent) chert formations of the Malmani Subgroup (Chuniespoort Group of the Transvaal Supergroup). The thickness of the dolomite basement is in the order of 500 to 800 m. The whole sequence dips slightly to the north (Golder, 2021; in WSP, 2025a).

Secondary geological features are present in the form of sub-vertical/vertical diabase dykes as indicated in Figure 6-8. According to the 1992 geotechnical assessment of the site area, these dykes are fractured and weathered down to a depth of ~30 m (Pollock et al, 1992; cited in (WSP, 2025a) and are, thus, not regarded as groundwater barriers on a local scale (Golder, 2021; in WSP, 2025a).

The site area is covered with a loose gravels, pebbles and fragments – all origination from the underlying chert formation. Rock outcrops noted in open areas in the eastern part of the site area consists of fractured chert (Golder, 2021; in WSP, 2025a).

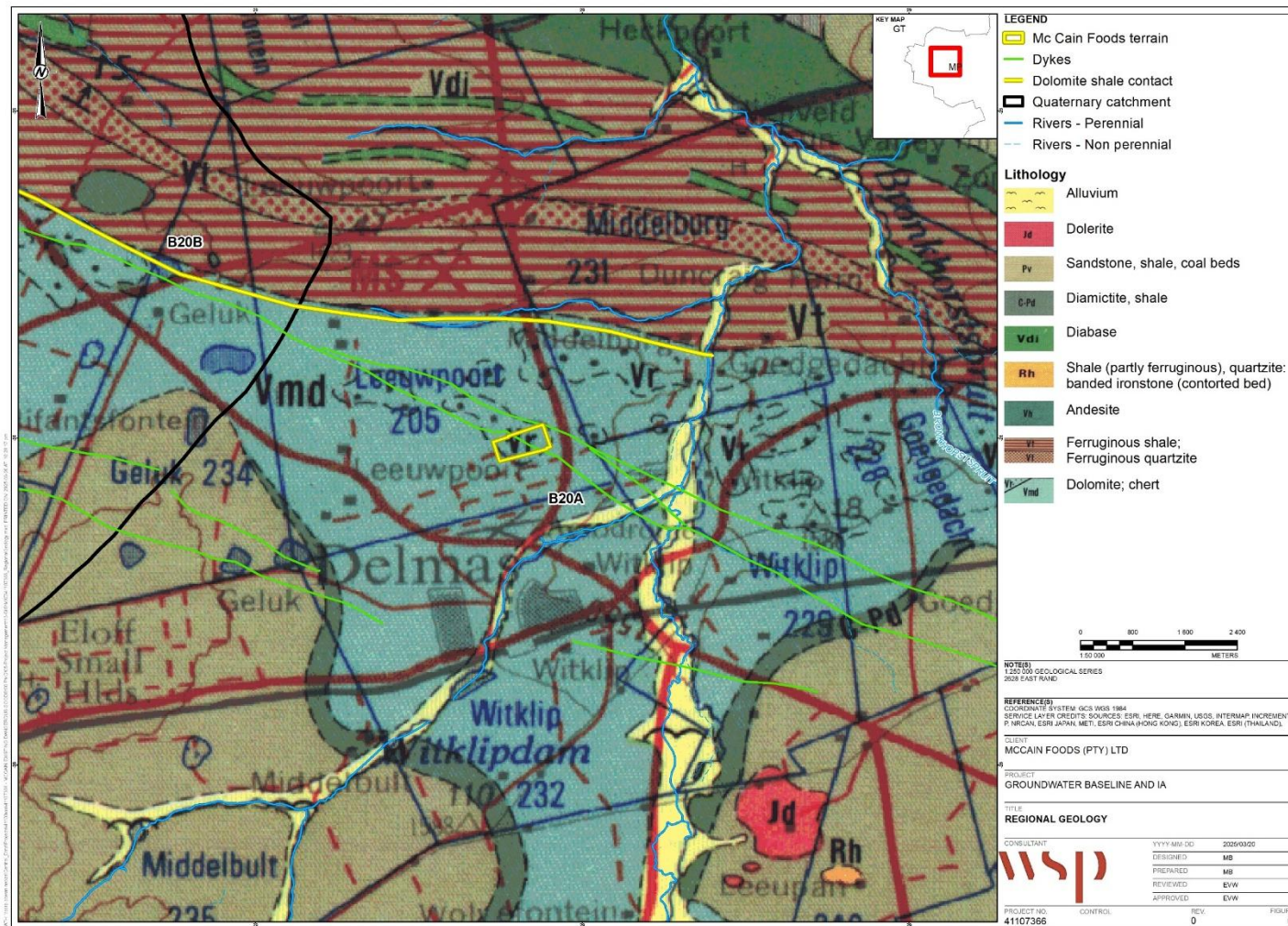


Figure 6-7 – Regional Geology

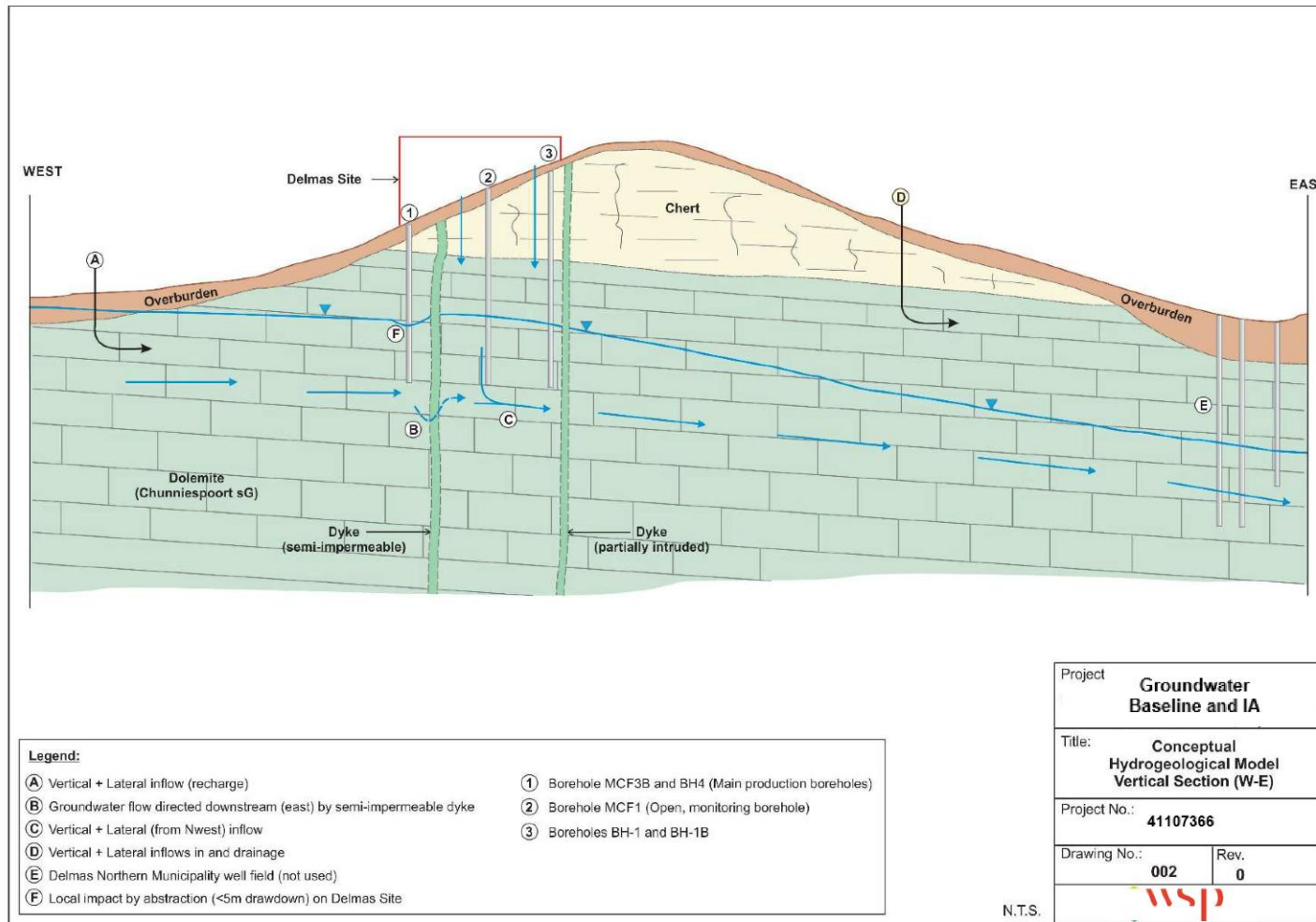


Figure 6-8 - West-East Geological Cross Section of the McCain Delmas Site showing the Main Geological Formations based on Drilling Information and Geological Maps

6.1.4.1 Geotechnical Investigation

A phase 1 shallow surface geotechnical and dolomite stability investigation was undertaken for the proposed WWTP site in 2023 (Rockland Geoscience (Pty) Ltd, 2023) (attached as Appendix D.10). The various investigations included a desktop study, nine test pits excavated to a maximum depth of about 3 m, five percussion boreholes drilled to depths of 41 m to 60 m and laboratory testing of disturbed soil samples. The results of the investigation were as follows:

Ground Profile

- The majority of the site is covered by very loose to medium dense fill, comprising sand and gravel with varying amounts of chert cobbles and boulders. Building rubble and domestic waste are also present.
- The fill is thickest across the south-western part of the site where it attains a thickness of about 1m to 8m.
- The fill is underlain by a transported layer (hillwash and colluvium) consisting of very loose to very dense silty to clayey sand with gravel (hillwash) transitioning with depth to cobbles and boulders packed in a silty to clayey sand matrix (colluvium).
- Transported materials exhibit a slightly pinholed soil structure which is typical of collapsible soils.
- The transported layer has a thickness of about 1.3 m to 2.3 m.
- Weathered chert residuum comprising medium dense to very dense chert cobbles and boulders in a matrix of silty to clayey sand with gravel underlie the transported layer to a depth of 0.5 m to about 2 m.
- Hard rock chert breccia underlie the chert residuum to depths of about 20 m to over 60 m.
- Dolomite residuum consisting of chert, wad (compressible clayey silt derived from the decomposition of dolomite) and cavities underlie the chert breccia to a depth of about 33 m.
- Cavities were intersected in dolomite residuum in boreholes RG1, RG4 and RG5.
- RG1 intersected a cavity at 52m - 53m, RG4 at 28m - 29m and 30m - 33m and RG5 at 28m – 32 m.
- Weathered dolomite underlie dolomite residuum and was intersected in boreholes to depths of 35 m to 60 m.
- Dolomite bedrock underlies weathered dolomite.
- Seismicity.
- The peak ground acceleration at the site is about 0.13 g with a 10% probability of being exceeded in a 50-year period.

Hydrology

- Water strikes were recorded in two boreholes (RG1 and RG2), but water rest levels, measured a minimum of 24 hours after the completion of drilling, were recorded in only one borehole (RG1) at a depth of 36m below ground level (mbgl) or an elevation of 1542 mamsl.
- No shallow groundwater seepage was intersected in any of the test pits that were excavated during the investigation.

Dolomite Stability

- A dolomite stability assessment of the boreholes characterised the site as having a medium risk for the development of small sized (<2m diameter) sinkholes, medium sized (2m<diameter<5m) sinkholes and large sinkholes (5m< diameter <15) and a low risk for doline development for the non-dewatering scenario.

- The low-density material (dolomite residuum containing wad and cavities) encountered in boreholes RG4 and RG5 indicate a medium to high risk for the development of large sinkholes (5m<diameter<15m) and a medium risk for doline development for the dewatering scenario.
- An Inherent Risk Class 4//4 is assigned to Zone A and Risk Class 4//7 is assigned to Zone B and a dolomite designation of D3 is assigned to the overall site.

6.1.5 SOIL, LAND CAPABILITY AND AGRICULTURAL POTENTIAL

This section was supplemented with information from the Soil, Land Capability and Agricultural Potential Assessment (Soil Advisory Services, 2025) (attached as Appendix D.9).

A set of five (5) observation points were inspected during the soil survey, to confirm the soil forms, land use and land capability of the proposed WWTP footprint.

The soil survey was conducted on 20 March 2025, where five observation points were evaluated during the survey. At each observation point, the soil was augered to a depth of 120 cm (unless an impenetrable layer was encountered restricting sampling depth) using a bucket auger. The relevant and distinct soil and landscape features were recorded at each observation point. The soil samples were submitted for laboratory analysis. The results of the study indicated the following:

- During the soil survey it was noted that the majority of the proposed WWTP footprint is largely covered by fill material, presumably mostly soil and rock material originating from the previous construction activities at the McCain Delmas operation.
- A portion of the study area closer to the eastern boundary is not covered with fill material (see Figure 6-9). Two soil observation points were inspected at this area. The soil forms along the eastern boundary of the study area are mainly of the Hutton soil form, which are characterised by reddish brown, friable, sandy loam topsoil, gradually transitioning into the friable, medium sandy loam apedal B horizon.
- Soils are medium sandy loam in texture. In terms of soil reaction, the soils are generally very slightly acidic with pH ranging from 5.06 – 6.06 and are non-saline (EC ranging from 13 – 28 mS/m). The calcium, magnesium and potassium status, and cation exchange capacity of the soils are low. Apart from one that has very high phosphorus levels, all other samples' P levels are low. The topsoil soil organic carbon levels range from 0.5 – 0.7 %.
- From a land capability perspective, more than half of the study area is currently covered with fill material and thus cannot be used for dryland cropping. 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 (less than 1.5 ha), commercial dryland cropping on this portion would not be economically feasible.
- The suitability / potential for agricultural use of the high land capability portion of the study area is limited given its small extent. For small-scale maize production to be viable a minimum land parcel extent of 5 ha is recommended. Given the remaining high land capability land is far below this (i.e., ~1.5 ha remaining), the study area can be considered to have low to medium agricultural potential.

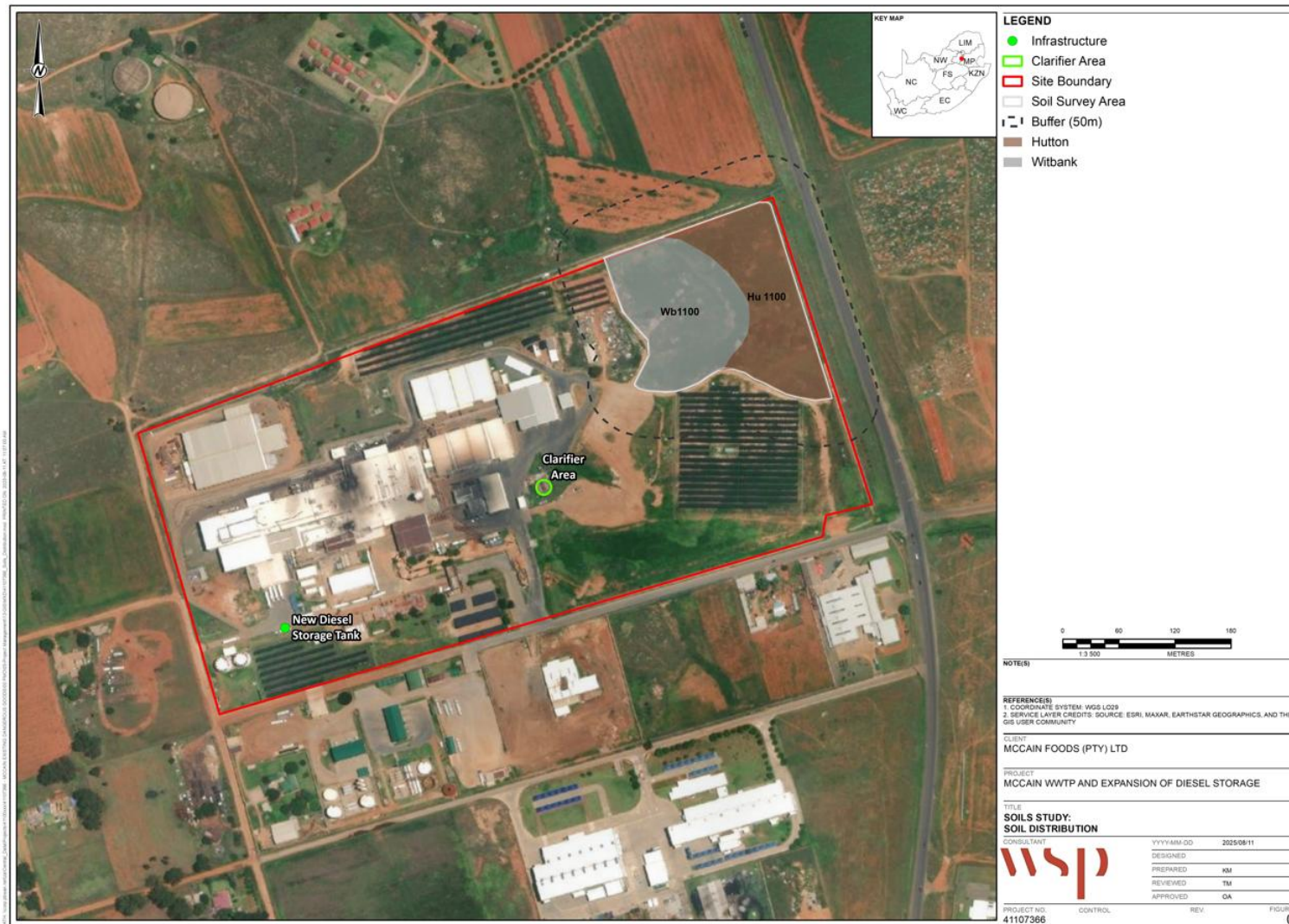


Figure 6-9 - Soil map of the WWTP area (Adapted from Soil Advisory services, 2025)

6.1.6 SURFACE WATER

The McCain Delmas Site is located on the B20A regional quaternary catchment. The main surface water drainage system is the Bronkhorstspuit running in a southwest-northeast direction about 2.8 km east of the site area.

6.1.7 GROUNDWATER

This section was supplemented with information from the Groundwater Impact Assessment (WSP, 2025a) (attached as Appendix D.2).

6.1.7.1 Hydrocensus

An initial comprehensive hydrocensus (46 boreholes) was conducted by Golder in 2015 and a follow-up hydrocensus of the McCain Delmas Site's on-site production and monitoring boreholes was completed in 2020 by Golder (7 boreholes). An additional hydrocensus was also conducted by Golder (7 boreholes) during 2021 to obtain hydrogeological information from the surrounding water users and collate information on their water supply boreholes and independent uses. The latest referenced hydrocensus was conducted by Ages (15 boreholes) during 2024. The locations of the hydrocensus boreholes are depicted in Figure 6-10.

The latest groundwater levels (2024) recorded at the McCain Delmas Site range from 23.9 m below ground level (mbgl) at Borehole 4 to 59.01 mbgl (Dplot140-2).

Four (4) groundwater level measurements obtained during the 2015 hydrocensus (Golder, 2015; in (WSP, 2025a) were compared to the 2024 hydrocensus data (Table 6-4) (Aces, 2024; in (WSP, 2025a). The water level comparison shows a decrease in groundwater levels. The property owners from Plot140 (Mr. Ferreira), Plot 48 (Mr. Masango) as well as some other property owners including Plot (Mr. Van Der Hoff) stated that the boreholes are running dry. The decrease in groundwater levels substantiate the statement of the property owners. Cumulative groundwater abstraction impacts on the groundwater. Such cumulative impacts can be attributed to a new mining activity in the area, located northwest of McCain Delmas Site as well as industrial, agricultural, and municipal groundwater abstraction (Aces 2024; in (WSP, 2025a).

Table 6-4 – Water Level Fluctuations between 2015 and 2024 (Adapted Ages 2024)

Borehole Number	Latitude	Longitude	Farm Name	Groundwater level (mbgl) Hydrocensus 2015	Groundwater level (mbgl) Hydrocensus 20224	Difference in Water Levels (m)
Dplot56	-26.1307	28.67672	Plot 56	26.07	30.66	-4.59
Dplot140-2	-26.1201	28.66655	Plot 140	51.62	59.01	-7.39
Dpot172	-26.1281	28.66843	Plot 172	38.4	40.3	-1.9
Dplot48	-26.1318	28.6711	Plot48	30.23	34.4	-4.17

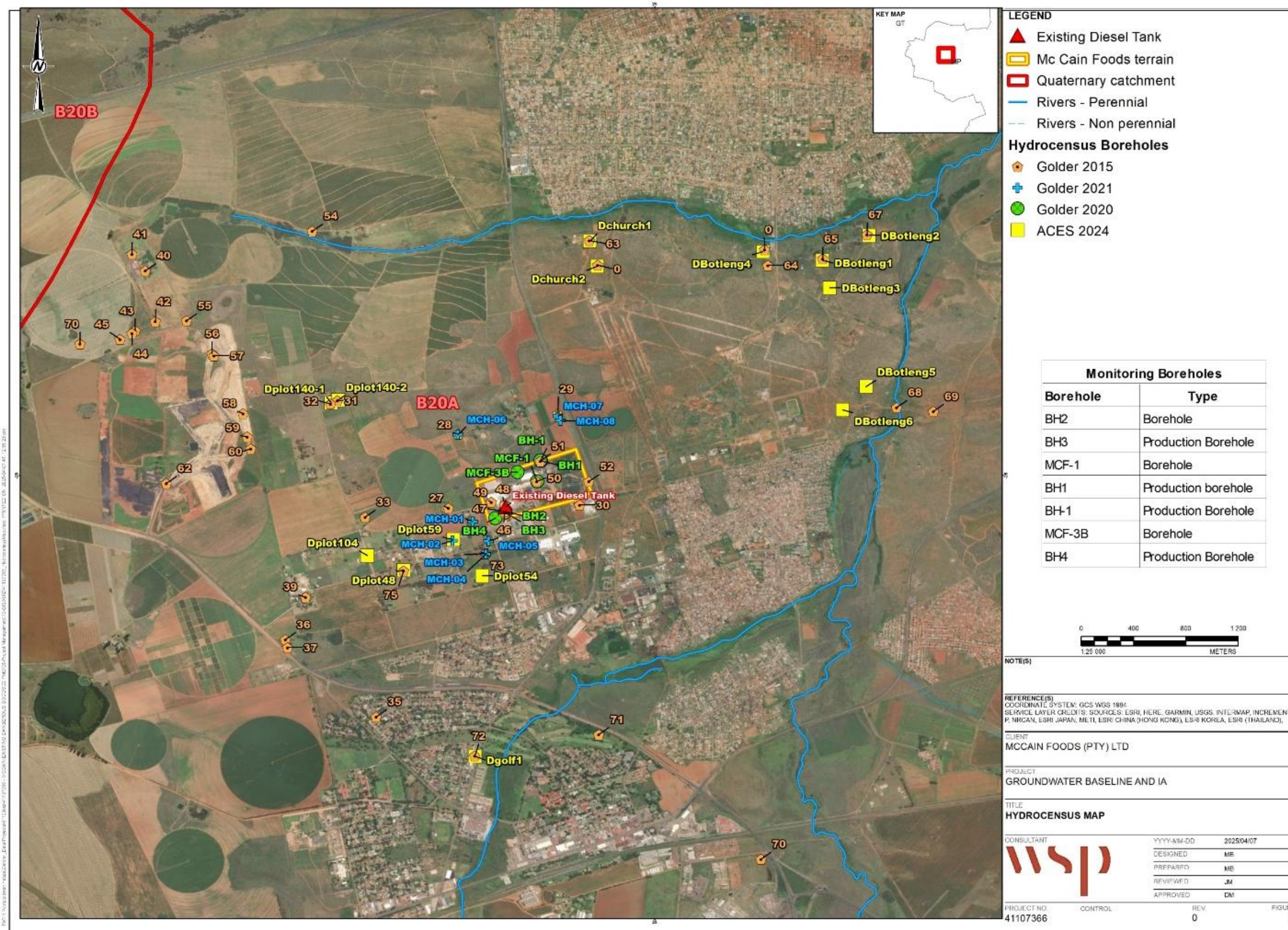


Figure 6-10 – Hydrocensus Boreholes

6.1.7.2 Aquifer Characterisation

The aquifer system on the site area consists of Malmani Dolomite Subgroup, capped by a competent chert horizon (overlying Rooihooft Chert Formation) with a thickness ranging between 10 and 30 m (Pollock et al, 1992; in WSP, 2025a). The dolomite rock formation has a thickness between 500 and 800 m (Golder, 2021).

Although the local water table varies between 20 and 25 m on the site, the overlying chert formation is partially saturated at areas where its thickness is >20 m. The weathering nature of the chert formation has formed a highly porous gravel, pebbly and chert fragmented layers – where the chert formation outcrops mainly on the eastern part of the site area, it has a highly fractured nature that represents preferential recharge pathways to the underlying dolomite aquifer system. There is a good hydraulic connection between the overlying chert formation and the dolomite rock basement where both units are saturated – based on the aquifer testing that has been conducted since 2011 on the Delmas Site (Golder, 2021).

The underlying dolomite rock formation is completely saturated; however, the aquifer is mainly characterised as a secondary water bearing unit, the hydraulic characteristics are high and therefore the aquifer system can be classified as a significant water resource (based on the Borehole Yield Classification, DWAF, 2003; in WSP, 2025a). This characteristic has been observed during the long-term constant rate borehole tests done on the selected abstraction boreholes on the site area (Golder, 2021).

6.1.7.3 Groundwater Vulnerability

Groundwater vulnerability gives an indication of how susceptible an aquifer is to contamination. Aquifer vulnerability is used to represent the intrinsic characteristics that determine the sensitivity of various parts of an aquifer to being adversely affected by a contaminant load imposed from surface. The national groundwater vulnerability map rates the underlying project area vulnerability as **HIGH**, indicating the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some surface location above the aquifer.

Impacts on the groundwater resource quality due to industrial developments and activities are always a significant risk and measures need to be introduced to minimise this. In the case of the McCain Delmas site, paving and storm water draining have been addressed by paving and storm water drainages in the vulnerable areas, i.e., the raw product receipt terrain. The original storm water dams, situated on the eastern (downstream) part of the terrain have been rehabilitated and all wastewater discharges are directed to the Delmas Municipality's wastewater reticulation system (Golder, 2021).

Vulnerability in terms of Water Quality

Based on the water quality analysis from the borehole tests (i.e., 2011 and 2021), any negative impact of the activity on the site area from local and/or regional potential sources have obviously not manifested through time. The water quality type is a Ca/Mg-HCO₃, low TDS concentrations and no elevated macro/micro-elements, trace metals concentrations and/or phenolic compounds. This compares well with the general water quality in the surrounding area as per the 2021 hydrocensus survey in the area (Golder, 2021), and latest groundwater quality results (2024/10/08).

Vulnerability in terms of Water Quantity

Long-term water level measurements, i.e., since 2011 report a water rise at the site area that could be related to (i) higher recharge in the region, and/or (ii) a general decrease in groundwater abstractions in the area.

Considering the fact that the basement rock formation in the area is a thick dolomite rock formation, deep leaching of chert-rich zones interbedded the dolomite rock could enhance ground stability risks, especially if the water table is lowered considerably due to abstraction, i.e., >6-7 m. This could develop into the formation of dolines and/or depressions where surface water accumulation forms and drains into the underlying dolomite. In the case of the McCain Delmas Site, the area is shielded by a thick chert layer – the Rooihooft Chert Formation (Golder, 2021).

No superficial doline/depression features have been noted through the years, and the factory follows engineering construction principles by having large concrete pavements with storm water drainages installed in the factory area.

6.1.7.4 Aquifer Classification

The aquifer on the site area is classified as:

- A high yielding aquifer system (Karst with borehole yields >5 L/s) in terms of the groundwater potential, in terms of the former Department of Water Affairs (DWA) classification of borehole yields, i.e., the “Borehole Yield Classification”, this aquifer has a significant borehole yield classification. Individual borehole yields could be around 40 L/s and more (Golder, 2021); and
- An aquifer containing “Good water quality”, i.e., a Class 0 water quality in terms of the hydrochemical composition (Golder, 2021) and latest groundwater quality results (2024/10/08).

6.1.7.5 Groundwater Levels and Flow Direction

The 2021 Golder hydrocensus groundwater levels have been adapted for the McCain Delmas Site. The groundwater flow direction at the site is mainly northeast towards the Bronkhorstspuit (see Figure 6-11).



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6.1.7.6 Groundwater Quality

The latest (2024/10/08) on-site groundwater quality results indicate that the groundwater has ideal water quality of Class 0 as per the Department of Water Affairs and Forestry, Domestic Water Quality Guidelines, Volume 1, 1996 and Water Research Commission, Water Quality Guidelines, 1998.

6.1.7.7 Groundwater Conceptual Model

A groundwater conceptual model has been developed showing the groundwater flow regime and is illustrated Figure 6-12 below. Important aspects of the conceptual groundwater model are high-lighted as follows:

- The site area lies on a prominent formation represented by a remnant of the Rooihoogte Chert (Vr) Formation consisting of chert and quartzite ranging from fresh (deeper parts) to highly fractured and eroded (upper parts).
- The main aquifer is the Malmani Dolomite (Vma) formation consisting of a massive dolomite basement with secondary layers of chert – main water strikes on the site area is leached fracture zones forming part of an interconnected network of water bearing zones [probably] down to a depth of 100 ± 20 m.
- Further north the Malmani Dolomite is overlain by the Timeball Hill Shale (Vt, ferruginous) formation. This formation forms a small escarpment directing surface runoff towards the underlying Malmani Dolomite formation.
- The dolomite aquifer system represents a significant water system with high transmissivity (130 to 400 m^2/d) and storativity ($\sim 1.13\text{E-}01$) – taken from local studies in the dolomite water area (Golder, 2020) and indicated by the 2011 (BH-3B), 2019 (BH-1B) and 2021 (BH04) production borehole test pumping exercises (Golder, 2021).

The hydrological cycle on the Delmas Site area includes the following components:

- Direct (or vertical) recharge from rainfall is estimated at 10.8 Mm^3/for the B20A quaternary catchment based on the “dry season” annual volume (URRP) Groundwater Resources Assessment II estimate (DWAF, 2005; in WSP, 2025a).
- Lateral groundwater flow through the dolomite aquifer system is indicated on the conceptual model and indicates an eastward flow regime towards a secondary branch of the Bronkhorstspuit. The upstream quaternary catchment has a UGRP of 10.32 Mm^3/a . It is estimated that at least 24% of this annual recharge potential drains towards the B20A quaternary catchment via preferential northwest-southeast pathways, i.e., large diabase/dolerite structures.
- The Stress Factor (~ 0.18) is regarded as minimal and allows enough space for long-term adjustments, e.g., source depletion during significant climate variations.

In closing, long-term aquifer saturation levels over time, i.e., 2011 to 2021, indicates that historic groundwater abstractions from the McCain Delmas Site have not resulted in a groundwater resource depletion condition as the local water level has risen ~ 4 .

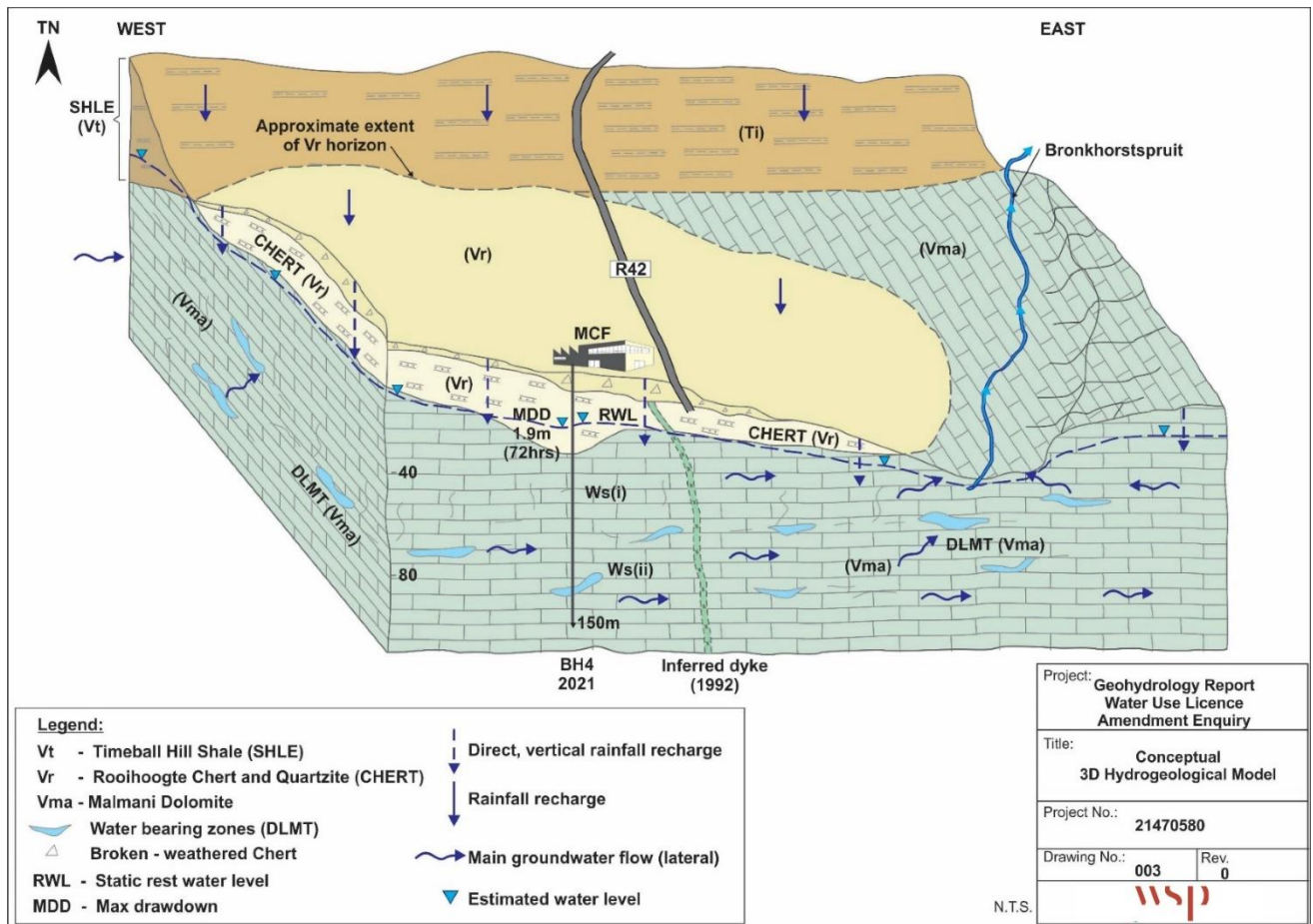


Figure 6-12 - Groundwater Conceptual Model (adapted from Golder, 2021)

6.2 BIOLOGICAL ENVIRONMENT

This section is supplemented with information from the report titled Terrestrial Biodiversity Fauna and Flora Compliance Statement (WSP, 2025f) (attached as Appendix D.5).

The study area for the terrestrial biodiversity assessment was defined as the development footprint i.e. the area in which the proposed developments will take place, referred to as the Local Study Area (LSA), which includes the area that will be disturbed or impacted by development activities. The project involves three LSAs within the greater McCain Delmas property. The Project Area of Influence (PAOI) was defined as the McCain Delmas property, which also serves as a buffer area, assessed to give effect to possible indirect impacts such as noise and dust that may affect adjacent habitats.

6.2.1 REGIONAL TERRESTRIAL BIODIVERSITY CONTEXT

6.2.1.1 Terrestrial Critical Biodiversity Areas and Ecological Support Areas

A portion of the PAOI is mapped as Other Natural Areas (Figure 6-13), which is largely aligned with grassland and a small patch of forested land as presented in the national landcover dataset (GTI, 2020; cited in WSP, 2025f). These datasets are however based on satellite imagery interpretation and as such the data may be aged and requires in-field verification. A key output of the vegetation and flora baseline study is the vegetation/habitat map of the project area, which defines the location and extent of natural and modified vegetation communities.

6.2.1.2 Priority Areas for Protected Area Expansion

The LSA does not coincide with areas that have been identified as Priority Focus Areas as part of the National Protected Area Expansion Strategy (2018), which is aligned with the Mpumalanga Biodiversity Sector Plan (MBSP) critical biodiversity areas (CBAs) and ecological support areas (ESAs).

6.2.1.3 Protected Areas

No nationally protected areas are situated within the LSA, as described by the National Protected Areas Register (DFFE, 2022; cited in WSP, 2025f).

6.2.1.4 Key Biodiversity Areas

The closest key biodiversity areas (KBAs) to the LSA are the Devon Grasslands Key Biodiversity Area (KBA ID100757). The LSA and PAOI do not coincide with a KBA.

6.2.2 TERRESTRIAL VEGETATION AND FLORA

The LSA is situated within the Eastern Highveld Grassland (Gm12) vegetation type. This vegetation type is listed as Endangered and is characterised by slightly to moderately undulating plains, including some low hills and pan depressions. The vegetation is a short dense grassland dominated by the usual highveld grass composition.

6.2.2.1 Habitat Description and Existing Impacts

Data collected during the field survey indicates that the proposed project footprints have been subject to anthropogenic disturbance, mostly in the form of historic vegetation clearance, storage of construction rubble, and alien invasive plant (AIP) species infestation on the proposed WWTW footprint, and complete transformation to hard infrastructure and manicured lawns on the proposed diesel tank site. The vegetation and habitat units encountered are displayed in Figure 6-14.

The WWTW portion of the site remains under alien invasive plant cover, with little to no indigenous vegetation present. The central and eastern portion of the WWTW site includes building and construction rubble that was stored there during construction of the McCain Delmas facility and completely cleared of vegetation in 2016. The eastern section of the WWTW was not disturbed during this time but has regressed due to considerable AIP infestation.

The diesel tank storage area has been transformed since construction of the McCain Delmas facility and no natural vegetation remains here.

Vegetation structure in the more natural areas in general is low closed grassland (sensu. Edwards, 1983). Compositionally, compared to rehabilitated grasslands, previously cleared areas are limited in nutrients and thus floristically depauperate. Dominant grass species recorded in this unit during the field survey include the tall, robust thatching grasses *Hyparrhenia hirta* and *Chloris virgata*, and relict-pioneer and early-seral taxa such as *Eragrostis racemosa*, *Eragrostis curvula* and *Eragrostis plana*.

Forbs recorded include a mixture of indigenous and alien ruderal and weedy species, such as *Bidens pilosa*, *Campuloclinium macrocephalum*, *Conyza albida*, *Pseudognaphalium luteo-album*, *Rumex acetosella*, *Tagetes minuta*, *Verbena bonariensis* and *Solanum panduriforme*.

In terms of woody vegetation, aggregations of alien *Acacia mearnsii* trees were noted in areas of secondary grassland, as were scattered *Sesbania* shrubs. A full list of species recorded can be found in Appendix A of (WSP, 2025f)

Other prominent forms of existing disturbance on site include a gravel road that runs along the perimeter of the study area, which also serves as a fire break. The grassland habitat encountered in the study area is not used for any specific purpose such as livestock grazing and is therefore not managed accordingly.

The previously transformed areas are regarded as modified habitats. On-site grassland habitat is a secondary floral community, derived from the regeneration of disturbed areas.

The diesel storage tank storage area is completely transformed and is not representative of the natural state vegetation as described from a desktop perspective

6.2.2.2 Vegetation and Flora Features of Conservation Concern

In light of the above-described condition of the site, for both those areas that have been completely transformed to infrastructure footprints and those still supporting disturbed and modified vegetation, it is confirmed that the study area does not support vegetation representative of the Endangered Eastern Highveld Grassland vegetation type. No plant SCCs were confirmed during the site survey, and the largely modified and disturbed nature of the site renders it unlikely to support any plant SCCs. Therefore, habitat within the LSA is considered to be of low and very low sensitivity.

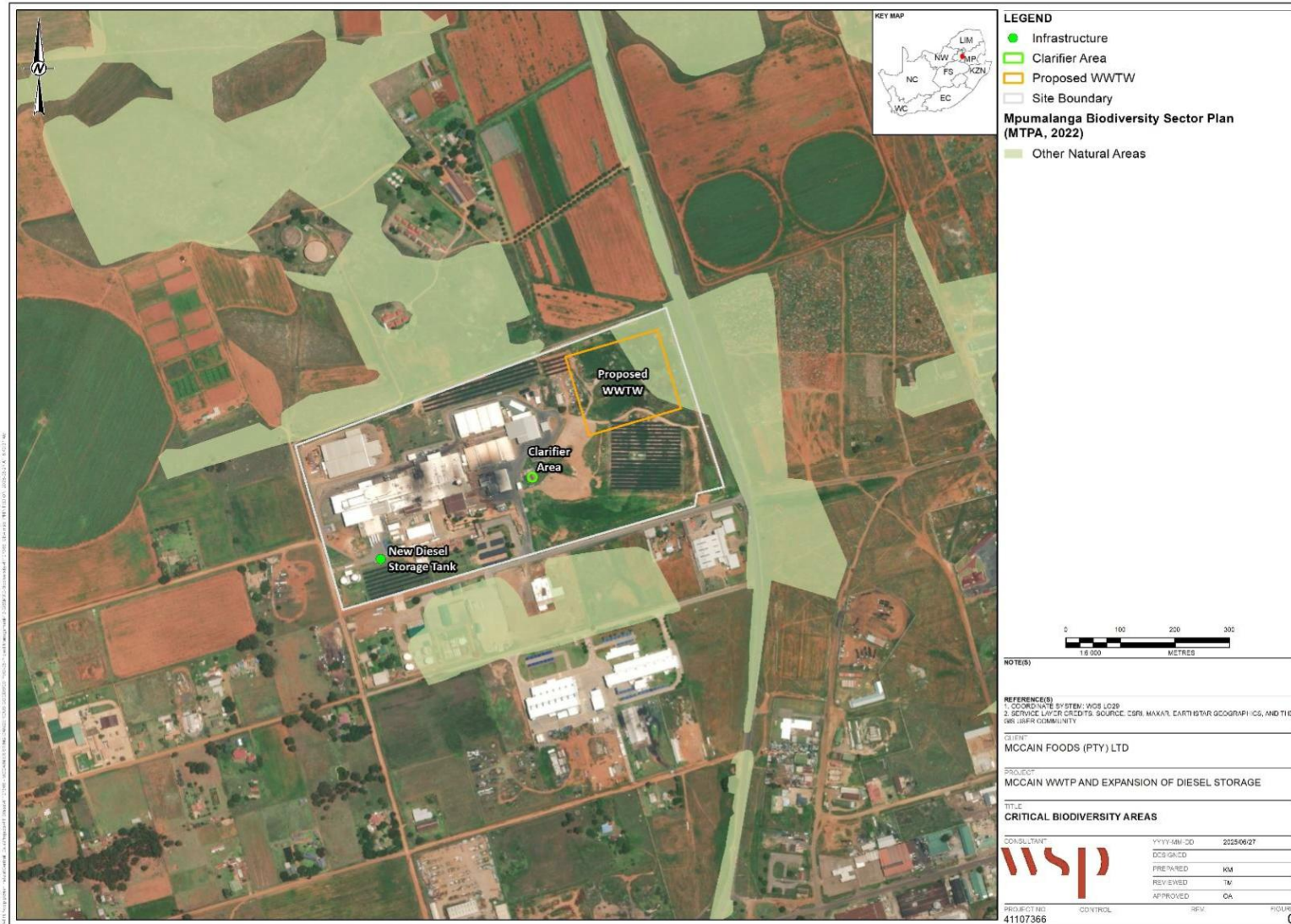


Figure 6-13 - Project area in relation to MBSP (2019)

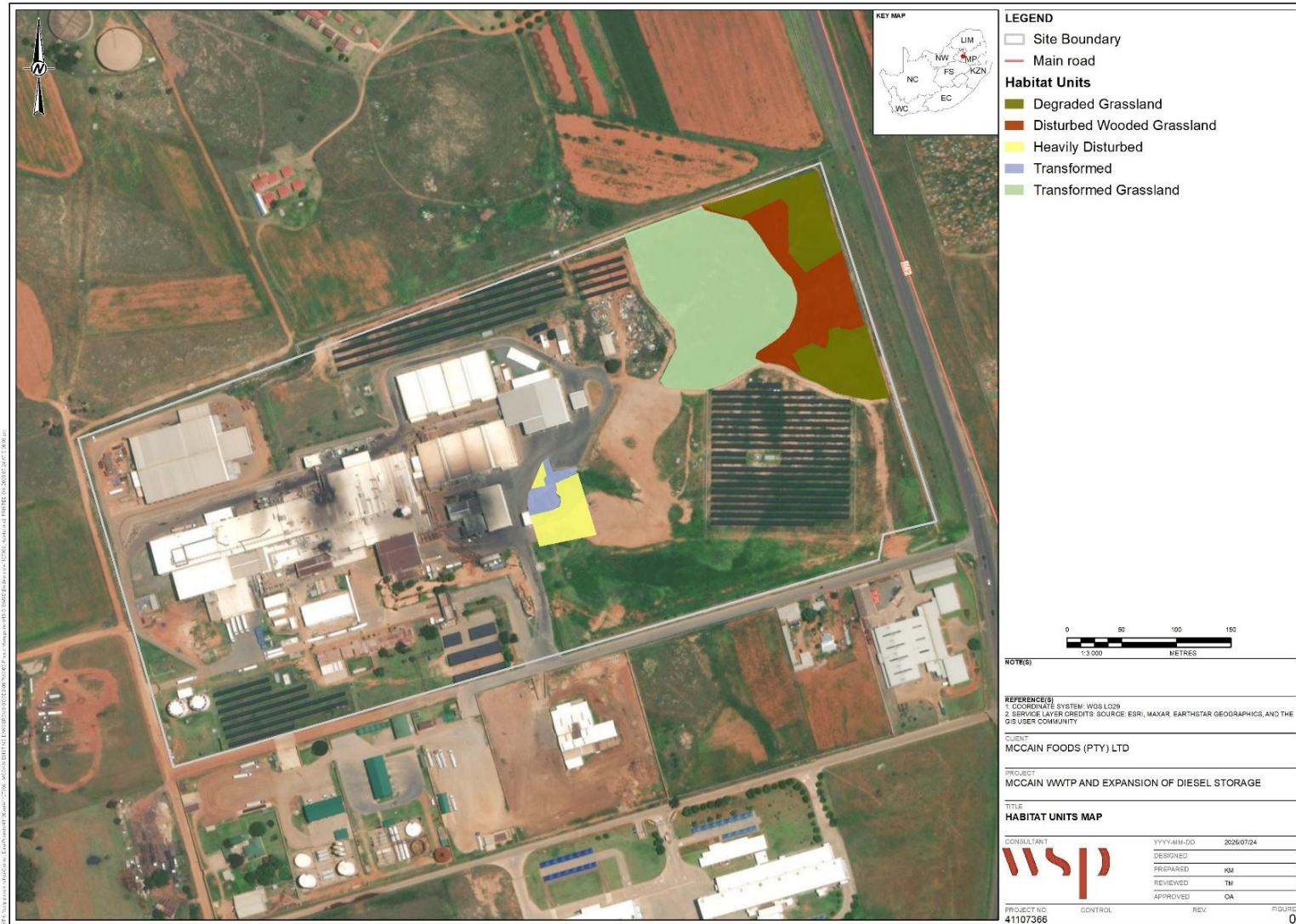


Figure 6-14 - Delineated Vegetation Units

6.2.3 FAUNA

The current habitat condition encountered within the LSAs and PAOI has resulted in limited habitat corridors, connectivity or habitat refugia availability for fauna. The McCain Delmas property is also 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 LSA given the lack of suitable habitat, and matrix of anthropogenic activities and impacts present.

6.2.3.1 Mammals

No mammal species were recorded during the site visit, which is attributed to the isolated and impacted nature of the study area. The screening tool highlighted the potential presence of three mammalian SCCs, which are discussed below. The desktop analysis did not highlight the potential presence of any additional mammalian SCCs.

The desktop analysis did not highlight the potential presence of any additional mammalian SCCs.

- Makwassie Musk Shrew (*Crocidura maquassiensis*)

This is a rare species endemic to South Africa, Swaziland and Zimbabwe, existing in moist grassland habitats in the Savannah and Grassland biomes. Although it has a wide inferred extent of occurrence, it appears to be patchily distributed. Wetlands are used as a proxy for suitable habitat and calculate the amount of natural habitat remaining within buffer strips around wetlands as the inferred area of occupancy (AOO), which yields a range of 1,790–2,089 km² (32 m buffer strip). We suspect that these habitat patches are severely fragmented as shrews have a poor dispersal ability, and continuing rates of urban and rural expansion (highest rates are 15% and 9%, respectively, in Limpopo Province) may have increased overgrazing and water abstraction, which may reduce the suitability of patches and the corridors between them. This species was not encountered during the field visit and is unlikely to occur in the PAOI due to the current state of the available habitat, the levels of ongoing disturbance, and the lack of suitable wetland habitat.

- Roberts's Water Rat (*Dasymys robertsii*)

These species have been recorded from a wide variety of habitats, including forest and savannah, swampland and grasslands, but they rely on intact wetlands in these areas. They have not been recorded from agricultural landscapes or dam areas. They occur specifically in reed beds and among semi-aquatic grasses in wetlands or swampy areas or along rivers and streams, as well as in grassy areas close to water wherein they co-occur with *Otomys* spp. (Skinner and Chimimba 2005). This species was not encountered during the field visit and is unlikely to occur in the PAOI due to the current state of the available habitat, the levels of ongoing disturbance, and the lack of suitable wetland habitat.

- Rough-haired Golden Mole (*Chrysospalax villosus*)

Found on sandy soils in grasslands, meadows and along edges of marshes in Savanna and Grassland biomes of South Africa. Recorded from gardens and parklands, also found in dense stands of kikuyu grass (*Pennisetum clandestinum*) and marginally on golf courses adjoining natural grasslands. This species was not encountered during the field visit and is unlikely to occur in the PAOI due to the current state of the available habitat, the levels of ongoing disturbance, and the lack of suitable wetland habitat.

6.2.3.2 Avifauna

The avifauna species recorded during the site visit are provided in the specialist report (WSP, 2025f). No SCCs were recorded. The screening tool indicated the potential presence, based on habitat suitability modelling, of *Eupodotis senegalensis* (White Bellied Bustard), a nationally Vulnerable, and internationally Least Concern listed species. The specific habitat required by the White Bellied Bustard is not present on site and no evidence was found to suggest their presence.

6.2.3.3 Herpetofauna

No reptile or amphibian species were recorded during the site visit, likely due, in part, to the isolated and impacted nature of the study area, as well as the lack of suitable habitat. No herpetofauna SCC were flagged by the screening tool as having a probability of occurring in the LSA.

6.2.3.4 Invertebrates

The winter timing of the survey did not coincide with the most suitable times for most invertebrate species activity. For this reason, the only species that was considered during the field visit was the *Clonia* species highlighted by the screening report.

Uvarov's *Clonia* is a species of Orthoptera in the family Tettigoniidae. The threat status of Uvarov's *Clonia* (*Clonia uvarovi*) is Vulnerable under criterion B1. Its extent of occurrence is relatively small (~5,000 km²); it has only been recorded in five locations from Gauteng and North-West Provinces, and the area, extent and quality of its habitat are expected to be in decline due to grazing pressure, cultivation, urban development, invasive alien plants and climate change. Furthermore, this species is not known to occur in any protected areas. This species inhabits tall woodland savannah. This habitat type is absent from the PAOI; therefore, the site is not expected to support this invertebrate species.

6.2.4 EXISTING IMPACTS ON BIODIVERSITY AND DRIVERS OF CHANGE

The LSA and PAOI have been significantly transformed through past, and ongoing, disturbance. They also exist within a landscape that has been largely transformed due to agricultural activities (conversion to cultivated lands), and urban and pre-urban expansion. These land use changes have resulted in a loss of natural vegetation and habitat, and in conjunction with infrastructure such as roads, powerlines, and property boundary fences/walls, etc., have caused habitat fragmentation, and create barriers to faunal movement. Ongoing development also has indirect impacts on remaining natural, adjacent areas, such as air and water pollution. These local and landscape level changes reduce habitat availability and the quality and suitability of remaining habitats.

6.3 SOCIAL ENVIRONMENT

This section is supplemented with information from the Social Impact Assessment Report (WSP, 2025d) (attached as Appendix D.8).

6.3.1 REGIONAL CONTEXT

The proposed project is in Mpumalanga Province, located near Delmas Town. The town is located some 19 km north-east of Springs and 73 km south-east of Pretoria. Mpumalanga Province covers an area of 76 495 km² with a population of approximately 4,335,965 (WSP, 2025d). The capital city of Mpumalanga is Mbombela, and other major cities and towns include Ermelo, Secunda, eMkhondo, Malelane, Middelburg, Barberton, and eMalahleni, which is the closest major town to the proposed project (WSP, 2025d).

The province is divided into three district municipalities: Ehlanzeni, Gert Sibande and Nkangala Districts. The project is located in the Nkangala District. The three districts are further subdivided into six local municipalities. The proposed development is in the Victor Khanye Local Municipality.

Victor Khanye Local Municipality covers an area of 1,568 km². It is one of the six local municipalities within the Nkangala District Municipality (Victor Khanye Local Municipality, 2023; in WSP, 2025d). As of 2022, Victor Khanye has a population of 106,149 people. VKLM is the least populous municipality in Nkangala District. VKLM comprises nine Wards (Victor Khanye Municipality, 2022; in WSP, 2025d).

eMalahleni Municipality bounds Victor Khanye Municipality to the east, and Gauteng Province to the Northwest and Gert Sibande District Municipality to the south (Stats SA, n.d; in WSP, 2025d). It is accessible through one national road and three provincial roads, N12, R555, R42 and R50.

6.3.2 VICTOR KHANYE LOCAL MUNICIPALITY

6.3.2.1 Population

According to the 2022 Census data from Statistics South Africa, the population of Victor Khanye Local Municipality (Delmas) is 106,149. This marks a significant increase from the 75,452 recorded in the 2011 Census, reflecting a growth rate of approximately 3.31% per annum.

6.3.2.2 Gender and Age Profile

According to the Statistics South Africa 2022 census, most of the Victor Khanye Local Municipality has a young population (25 -29 years), forming 5.6% of the total male population and 5.3% of the total female population. The gender distribution is nearly balanced, with 53,973 males (50.9%) and 52,175 females (49.1%), resulting in a sex ratio of approximately 103.4 males for every 100 females.

The age structure of the municipality indicates a predominantly working-age population. Approximately 25.4% (26,992 individuals) are under the age of 15, 70.5% (74,783 individuals) are between 15 and 64 years old, and 4.1% (4,374 individuals) are aged 65 and above. This distribution suggests a youthful demographic with a dependency ratio of 41.9 dependents per 100 working-age individuals.

6.3.2.3 Education Profile

According to the 2022 Census data, Victor Khanye Local Municipality shows a gradually improving educational profile. Among residents aged 20 years and older, 8.0% have received no formal schooling, a decline from 10.7% recorded in 2016. Meanwhile, 3.8% of the population have attained higher education qualifications, slightly lower than the 5.4% noted in 2016. The municipality also boasts a relatively high school attendance rate, with 93.7% of school-aged children (5 to 17 years old) enrolled in school, closely aligning with the provincial average of 95.1%. Notably, the Victor Khanye education circuit demonstrated significant progress in 2022, improving its matric pass rate from 52.8% in 2021 to 72.5% in 2022, earning recognition as the most improved circuit in the Nkangala District. These statistics reflect ongoing efforts to strengthen educational outcomes and support youth development in the area.

6.3.2.4 Educational Facilities

Victor Khanye Local Municipality has a range of educational facilities, including several primary and secondary schools that serve the local population. The area is also supported by Further Education and Training colleges offering vocational and technical programs to equip students with practical skills. However, there are no universities located within the municipality, so residents typically access higher education institutions in nearby urban centres. Overall, the education

infrastructure in Victor Khanye supports various levels of learning, from basic schooling to vocational training.

6.3.2.5 Labour Profile

In 2022, Victor Khanye Local Municipality had an employment rate of approximately 43.2% among its working-age population, with an unemployment rate of around 31.4%. These figures indicate moderate labour market participation but also highlight persistent challenges in job creation. At the time of producing this report, the 2022 stats could not be verified.

6.3.2.6 Economic Indicators

Victor Khanye Municipality is projected to experience a negative Gross Domestic Product growth rate of -0.3% per annum from 2019 to 2024, mainly due to the impacts of the COVID-19 pandemic. However, this decline is expected to be less severe than that of the Nkangala District and Mpumalanga Province. Historically, the municipality's average annual growth rate has decreased from 2.7% between 1996 and 2018 to 1.7% from 2011 to 2016.

In 2019 Victor Khanye contributed 2.2% to the Mpumalanga provincial economy, marking a relative increase compared to 2011. Its Gross Value Added for that year was R4.5 billion, at constant 2010 prices. However, its contribution to the Nkangala District's economy was at just 5.5%.

Victor Khanye significantly contributes to the district's key industries, with agriculture accounting for 21.6% and transport contributing 12.3%. Other sectors made relatively small contributions. The figures reflect the municipality's primary strengths in agriculture and transport within the district.

6.3.2.7 Employment Sector Contribution

The municipality comprises sectors that contribute to the regional economy and employ the people of Victor Khanye and surrounding areas. The local economy in Victor Khanye Municipality is relatively diversified, with the largest sector, in terms of output, and for a proportional contribution, being the Mining sector. The Trade sector and Community Services sector follow the Mining sector. During recent years, there has not been any significant growth in all sectors. The sector, which experienced a slight expansion in terms of output in the Victor Khanye Municipal area, was agriculture (1%).

6.3.2.8 Inequality and Poverty Levels

The poverty rate in Victor Khanye Municipality is quite concerning. Many households live below the poverty line, with the average household income being R80,239 per annum. This income level places the municipality 9th in the province regarding overall statistics (Victor Khanye, 2022).

Additionally, the municipality faces a high unemployment rate of 31.4%, exacerbating poverty. Efforts are being made to address these socio-economic challenges, including initiatives to create job opportunities and support youth-owned enterprises to obtain a further R137 Million Rands over the threshold (Statistics South Africa, 2006; in WSP, 2025d).

6.3.3 COMMUNITY HEALTH

Victor Khanye Local Municipality has one hospital, three primary health clinics, three mobile clinics (of which only one is operational), and six private doctors and one private clinic. There is a newly built clinic in Extension 5 that is operational. About 14 non-governmental organisations are currently operating in the public health sector. Seven trained volunteers are working on HIV/AIDS counselling (Victor Khanye Local Municipality, 2023)

The main challenge is retaining health workers in the public sector and maintaining standards. The statistics for South Africa in 2006 indicated that there were 1443 new infections recorded daily, and 947 HIV/AIDS deaths recorded daily (Victor Khanye Local Municipality , 2023) . The number of people living with HIV was recorded at 5.37 million people nationally. The impact on the local workforce is being felt within the municipality. A high prevalence of HIV/AIDS within the Victor Khanye Community has numerous implications for local economic development (Victor Khanye Local Municipality , 2023).

6.3.4 MCCAIN DELMAS

As a global company, one of McCain's sustainability goals is to support thriving communities through long-term development, education and support of farmers and families in the local communities. In line with this commitment, McCain Delmas donates various process by-products such as potato skins to local farmers and community members and implements regular training programmes aimed at upskilling staff members and members of the local community.

McCain Delmas currently employs around 400 permanent staff with approximately 100 temporary employees.

6.3.5 DESCRIPTION OF THE SOCIAL RECEIVING ENVIRONMENT

Sensitive social receptors refer to local people within a 5 km radius of the proposed project that may be influenced by the project activities due to their proximity to the proposed project area.

6.3.5.1 Primary Receptors (within 1 km)

McCain Delmas Plant is surrounded by farmlands and factories. Farmland with crop fields is located on the northern side of the McCain property while industrial facilities are located on the southern side. Some of the industrial facilities include FLSmith Delmas Super Centre, Q4 Fuel Delmas and VKB. The primary social receptors are associated with the industrial and agricultural sectors.

6.3.5.2 Secondary Receptors (within 3 km)

Botleng, Delpark and Delmas West residential areas are located within 3 km of the McCain Delmas Plant. This region is largely characterised by farmlands and a few factories, together with the residential area. The primary social receptors are in the residents of Botleng, Delpark and Delmas West.

6.3.5.3 Tertiary Receptors (within 5 km)

This region covers more farmlands, the town of Delmas and all surrounding residential areas. The primary social receptors are the residents of Delmas. Examples of receptors include, but are not limited to, schools, shopping centres, hospitals, office blocks, residential areas and in more remote locations individual farmhouses or farmsteads.

6.3.6 HERITAGE

According to the Phase 1 HIA developed for this project (APAC Consulting , 2025), attached as Appendix D.6, there are no known Stone Age sites in close proximity to the study area, with the closest known sites being a Later Stone Age site (Fort Troje) situated near Cullinan and rock painting sites that have been recorded close to Witbank (Bergh 1999; in APAC Consulting , 2025).

No Early or Middle Iron Age sites are known to occur in the large geographical area within which the study area falls, although a number of LIA stone walled sites do occur in the larger area (Bergh 1999; in APAC Consulting , 2025).

The town of Delmas was laid out in 1907 on the farm *Witklip* (Afrikaans for *White Stone*) and has been administered by a town council since 1965. The name was given by the Frenchman Frank Campbell Dumat, former owner of Witklip, after his grandfather's farm in France. He originally laid out the town with 192 residential stands, 48 four-hectare small holdings and 138 ha of commonage but by 1909 the government added a further 5 500 ha to the town. This would be divided into 85 small holdings of around 64 ha. Bothibelong is a township 3 km north of Delmas. The name is derived from Sotho and means 'protection'. A newer location is named Botleng, which means 'place of beauty' in Sotho. No sites, features or material of historical significance was identified and recorded in the study area (APAC Consulting , 2025).

6.3.7 PALAEONTOLOGY

This section was supplemented with information from the Palaeontological Impact Assessment report, (Bamford, 2025) (attached as Appendix D.7).

The McCain Delmas site lies in the Transvaal Basin that has exposures of the basal members of the Transvaal Supergroup and overlies the older rocks of the Witwatersrand Supergroup. Unconformably overlying the Transvaal Supergroup rocks are the much younger basal members of the Karoo Supergroup as this is the northern margin of the Main Karoo Basin. Along the rivers and watercourses are recent deposits of sand and alluvium, of late Quaternary age.

In the Transvaal Basin the Transvaal Supergroup is divided into two Groups, the lower Chuniespoort Group and the upper Pretoria Group (with ten formations; Eriksson et al., 2006; in (Bamford, 2025)). The Chuniespoort Group is divided into the basal Malmani Subgroup that comprises dolomites and limestones and is divided into five formations based on chert content, stromatolitic morphology, intercalated shales and erosion surfaces. The top of the Chuniespoort Group has the Penge Formation and the Deutschland Formation.

Making up the lower Pretoria Group are the Rooihooft Formation, Timeball Hill Formation and the Boshhoek Formation. The Hekpoort, Dwaalheuwel, Strubenkop and Daspoort Formations form a sequence as the middle part of the Pretoria Group, Transvaal Supergroup, and represent rocks that are over 2060 million years old. The Hekpoort Formation is a massive lava deposit and is overlain by the Dwaalheuwel conglomerates, siltstone and sandstone (not present here). A hiatus separates the Strubenkop Formation slates and shales from the overlying quartzites of the Daspoort Formation. Upper Pretoria Group formations are the Silverton, Magaliesberg, Vermont, Lakenvalei, Nederhorst, Steenkampsberg and Houtenbek Formations (Bamford, 2025).

6.3.7.1 Palaeontological context

The site for development is in the potentially very highly sensitive Malmani Subgroup dolomites that could preserve trace fossils such as stromatolites and microbialites (Bamford, 2025).

Stromatolites are the layers upon layers of inorganic materials that were deposited during photosynthesis, namely calcium carbonate, magnesium carbonate, calcium sulphate and magnesium sulphate. These layers can be in the form of flat layers, domes or columns depending on the environment where they grew (Beukes, 1987; in Bamford, 2025). Some environments did not form stromatolites, just layers of limestone that later was converted to dolomite. The algae that formed the stromatolites are very rarely preserved, and they are microscopic so they can only be seen from thin sections studies under a petrographic microscope.

Microbialites (sensu Burne and Moore, 1987; in Bamford, 2025) are organo-sedimentary deposits formed from interaction between benthic microbial communities (BMCs) and detrital or chemical

sediments. In addition, microbialites contrast with other biological sediments in that they are generally not composed of skeletal remains. Archean carbonates mostly consist of stromatolites. These platforms could have been the site of early O₂ production on our planet. Stromatolites are the laminated, organo-sedimentary, non-skeletal products of microbial communities, which may have included cyanobacteria, the first photosynthetic organisms to produce oxygen. Another type of trace fossil has been termed Microbially-induced sedimentary structures (MISS sensu Noffke et al., 2001; in Bamford, 2025) or simply ‘fossil mats’ (sensu Tice *et al.*, 2011; in Bamford, 2025). These include swirls, rip-ups, crinkled surfaces and wrinkles that were formed by the mucus extruded by littoral algae or microbes and bound together sand particles. Caution against the assumption that all such structures are microbially induced unless there is additional evidence for microbes in the palaeoenvironment (Davies *et al.* 2016; in Bamford, 2025).

7 SITE SENSITIVITY VERIFICATION

As outlined in Section 2.1.1, the Screening Tool Report indicates that the proposed project sites are located within areas ranging from low to very high sensitivity. A stand-alone site sensitivity verification report has been included in Appendix C of this [draft](#) BAR. The Site Sensitivities were assessed by the EAP and specialists and are included in Appendix D (specialist studies).

Table 7-1 – Site sensitivity verification

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</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

Discipline	Infrastructure Type and Specialist Sensitivity Criteria	
	DFFE Screening Tool	Specialist/EAP Verification
	<i>villosus</i> , <i>Crocidura maquassiensis</i> , <i>Dasymys robertsii</i> , and <i>Clonia uvarovi</i> .	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 Theme Biodiversity	<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.
Civil Aviation Theme	<ul style="list-style-type: none"> As per the DFFE Screening Tool, the Civil Aviation Theme is classified as <u>High sensitivity</u>. The Screening Tool indicates that there is a civil aviation aerodrome within 8 km of the site. 	<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>.

Discipline	Infrastructure Type and Specialist Sensitivity Criteria	
	DFFE Screening Tool	Specialist/EAP Verification
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 Sensitivity Theme	<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 palaeontologists 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>Low</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	<ul style="list-style-type: none"> The DFFE's Screening Tool considers the project areas as having <u>Very High</u> Terrestrial Biodiversity sensitivity based on the presence of the endangered vegetation type, Eastern Highveld Grassland 	<ul style="list-style-type: none"> 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 <u>Low sensitivity</u> for the Terrestrial Biodiversity Theme is assigned.

8 ENVIRONMENTAL IMPACT ASSESSMENT

The BA process has determined potential impacts associated with the proposed WWTP and expansion of diesel storage at the McCain Delmas facility. The anticipated environmental and social impacts have been identified and assessed by the various specialists according to the phases of the project's development.

The impact assessment considers the following:

- The construction, operation and decommissioning of a WWTP and the expansion of the diesel storage, which is required to operate the new generator facility installed to be used as back-up power for the plant as and when needed.

8.1 AIR QUALITY

8.1.1 KEY ATMOSPHERIC EMISSIONS

The key pollutant emissions at McCain include NH_3 , CO, H_2S , NO_x , Odour, particular matter (PM), SO_2 , and TVOCs. Key emission sources for these pollutants include coal handling, boilers, diesel generators, storage tanks, vehicles on paved roads and the proposed WWTP process.

8.1.2 ATMOSPHERIC DISPERSION MODELLING

Atmospheric dispersion modelling was conducted for the project. Two dispersion modelling simulations were undertaken:

- Scenario 1 - Existing Operations: Coal handling, boilers, diesel generators, storage tanks, vehicles on paved roads and clarifier.
- Scenario 2 - Existing Operations & Proposed Operations (cumulative scenario): Coal handling, boilers, diesel generators, storage tanks, vehicles on paved roads, clarifier and aeration basin, and the biogas engine associated with the proposed WWTP.

The pollutants of focus include:

- PM_{10} and $\text{PM}_{2.5}$.
- CO.
- SO_2 .
- NO_2 .
- TVOC represented by benzene.
- NH_3 .
- H_2S .
- Odour.

Pollutant concentrations for 1-hour, 24-hour and annual averaging periods were simulated at each discrete receptor (Figure 6-3). Isopleth maps showing pollutant dispersion across the study area were developed (see WSP, 2025b). Simulated concentrations were evaluated against their respective NAAQS and international guidelines. Key findings can be summarised as follows:

- PM_{10} concentrations:
 - All predicted concentrations at sensitive receptors under Scenarios 1 and 2 do not result in exceedances of the ambient PM_{10} 24-hour ($75 \mu\text{g}/\text{m}^3$) or annual ($40 \mu\text{g}/\text{m}^3$) NAAQS.
 - The isopleths for Scenarios 1 and 2 do not show any changes, this is due to the minimal contribution from the gas engine under Scenario 2.
- $\text{PM}_{2.5}$ concentrations:
 - All predicted concentrations at sensitive receptors under Scenarios 1 and 2 do not result in exceedances of the ambient $\text{PM}_{2.5}$ 24-hour ($40 \mu\text{g}/\text{m}^3$) or annual ($20 \mu\text{g}/\text{m}^3$) NAAQS.
- CO concentrations:
 - All predicted concentrations at sensitive receptors under Scenarios 1 and 2 do not result in exceedances of the ambient CO 1-hour ($30,000 \mu\text{g}/\text{m}^3$) or 8-hour ($10,000 \mu\text{g}/\text{m}^3$) NAAQS.

- SO₂ concentrations:
 - All predicted concentrations at sensitive receptors under Scenarios 1 and 2 do not result in exceedances of the ambient SO₂ 1-hour (350 µg/m³), 24-hour (125 µg/m³) or annual (50 µg/m³) NAAQS.
- NO₂ concentrations:
 - All predicted concentrations at sensitive receptors under Scenarios 1 and 2 do not result in exceedances of the ambient NO₂ 1-hour (200 µg/m³) or annual (40 µg/m³) NAAQS.
- Benzene concentrations:
 - All predicted concentrations at sensitive receptors under Scenarios 1 and 2 do not result in exceedances of the ambient benzene annual NAAQS (5 µg/m³).
 - In Scenario 2 two off-site exceedances (7.0 µg/m³ and 6.1 µg/m³ respectively) of the benzene NAAQS are predicted to occur ~53.8 m and 14.2 m from the eastern boundary of McCain, near the proposed WWTP expansion.
 - Notably, these exceedances occur near the public road, where no residential occupancy is present.
- NH₃ concentrations:
 - All predicted concentrations at sensitive receptors under Scenarios 1 and 2 do not result in exceedances of the ambient TCEQ ESL NH₃ 1-hour guideline (180 µg/m³) and annual guideline (92 µg/m³).
- H₂S concentrations:
 - All predicted concentrations at sensitive receptors under Scenarios 1 and 2 do not result in exceedances of the ambient 1-hour H₂S OEHHA REL 1-hour guideline (42.0 µg/m³).
- Odour:
 - P98 1-hour odour concentrations at sensitive receptors under Scenarios 1 and 2 fall well below the 1-hour UK odour criteria limit (1.5 OUE/m³). In line with the UK Institute of Air Quality Management guidance, the impact significance for sensitive receptors is determined to be 'negligible'.

With the inclusion of the biogas engine, aeration basin and one additional diesel tank, predicted concentrations for all pollutants are unlikely to significantly affect the surrounding environment. Peak concentrations across all pollutants occur either within the operational boundary or adjacent to the facility's fenceline.

8.1.3 IMPACT ASSESSMENT

Outcomes of the air dispersion modelling indicate that the potential air quality impacts associated with both the current operations at the site as well as the operational phases of the proposed WWTP and diesel storage activities, on residential receptors, are considered low, with moderate magnitude, limited extent, and partial reversibility over the medium term. With mitigation measures in place, both the magnitude and likelihood of occurrence will be reduced, resulting in a very low residual risk to sensitive receptors.

Table 8-1 – Operational impacts of air pollution

Potential Impact: Operational phase impacts of air pollution on sensitive receptors	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	2	1	4	2	18	Low	(-)
With Mitigation	1	1	1	4	1	7	Very Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> ■ General Mitigations <ul style="list-style-type: none"> • Maintain appropriate operational controls and adhere to manufacturer stipulated repair and maintenance requirements for all equipment. • 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. ■ Storage tanks <ul style="list-style-type: none"> • 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. ■ Coal handling and storage <ul style="list-style-type: none"> • General housekeeping, including the regular cleaning of machinery and the areas around the coal bunker to remove deposited particles to minimise the load available for entrainment during high wind speed events. ■ WWTP <ul style="list-style-type: none"> • Investigate the feasibility of 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. Indigenous leafy trees that maintain their leaves throughout the year should be used. Multiple rows of trees (with taller and shorter but bushier species alternating) will increase 							

Potential Impact: Operational phase impacts of air pollution on sensitive receptors	Magnitude	Extent	Reversibility	Duration	Probability	Significance	Character
						<p>effectiveness of the barrier. Additional value of the VEB is protection from bioaerosols, noise mitigation and improved visual aesthetics.</p> <ul style="list-style-type: none"> Masking agents offer an additional odour neutralisation option should complaints arise despite the above recommendation. The efficacy of commercial additives varies widely, and local options can be investigated; Complaints and any actions arising from a complaint must be recorded in complaints register maintained by site management. If required, fence line measurements of H₂S can be initiated if complaints arise, which will provide a real-time indicator of odour impact. Warning communities to expect potential odour events during upset conditions (e.g. during desludging or when extended maintenance is scheduled) will 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. 	

8.2 NOISE IMPACT ASSESSMENT

8.2.1 CONSTRUCTION PHASE

Unlike general industry, construction activities are not always stationary or in one location. Construction activities at the site will include civil works (including surveying), reinforced concrete works, masonry works, façade works, floor works, carpentry works as well as mechanical and electrical installation works. During the construction phase of the project various noise sources may be present on site, including earth-moving equipment (trucks, cranes, scrapers and loaders), compressors and generators, pumps, rotary drills, concrete mixers and materials handling activities, among others. All these sources will generate substantial amounts of noise and may impact on neighbouring sensitive receptors (Figure 6-4); however, it is anticipated that the impact will be low, without mitigation, given that the impact will be felt over the short term (see Table 8-2).

Table 8-2 – Noise impact on surrounding sensitive receptors (construction phase)

Potential Impact: Noise impact on surrounding sensitive receptors	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	3	1	1	3	21	Low	(-)
With Mitigation	1	2	1	1	2	10	Very Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> ■ Planning 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. ■ When working near a potential sensitive receptor, limit the number of simultaneous activities to a minimum as far as possible. ■ Equipment with the lowest possible sound power levels must be selected. ■ Ensure that equipment is well-maintained to avoid additional noise generation. ■ Unnecessary revving of engines and switching equipment off must be avoided when not required. ■ Using rubber linings in, for example, chutes and dumpers to reduce impact noise. ■ Noise control devices such as temporary noise barriers and deflectors for high impact activities, and exhaust muffling devices for combustion engines must be used. ■ Reduce the drop height of materials whenever practical. ■ Plant and vehicles must be Started up sequentially rather than simultaneously. ■ Acoustic enclosures for equipment causing radiating noise must be installed, where practical. ■ Reducing any Project traffic through community areas where possible. ■ A mechanism to record and respond to complaints must be developed. ■ Ensure that all on-site personnel are equipped with the correct personal protective equipment including noise control hearing devices. 							

8.2.2 OPERATIONAL PHASE

The predicted daytime and night-time noise levels at the specified receptor locations associated with the operation of the proposed Project are presented in Table 8-3 and Table 8-4, respectively. The

predicted noise levels were compared with the current baseline noise levels (monitored) to assess any changes (cumulative impact) and the resultant impacts on the surrounding receptors.

Daytime noise levels at all receptor locations are predicted to increase by between 0.0 and 0.7 dB(A) with the operation of the proposed Project, resulting in “little” community/group response. Night-time noise levels at all the receptor locations are predicted to increase by between 0.0 and 0.3 dB(A), also resulting in “little” community/group response. It is noted that such increases at these locations (during both day and night) are well below the 5 dB(A) threshold for annoyance as per the Nkangala District Municipality Air Quality Management By-Law and as such, these increases are likely to go unnoticed.

Based on both the day and night-time results presented here, acoustic impacts of the operation of the proposed project are negligible and noise-related complaints from receptors are not anticipated.

Table 8-3 - Predicted daytime noise levels at specified receptor locations during the operational phase of the proposed project

Receptor	Current Noise Level (dB(A))	Predicted Noise Level (dB(A))	Cumulative Noise Level (dB(A))*	Change (dB(A))	Estimated Community Response**
Rec 01	48.5	41.2	49.2	+0.7	Little
Rec 02	51.7	38.3	51.9	+0.2	Little
Rec 03	47.4	32.4	47.5	+0.1	Little
Rec 04	54.0	29.1	54.0	0.0	Little
Rec 05	58.7	29.2	58.7	0.0	Little
Rec 06	50.0	34.8	50.1	+0.1	Little

* It is noted that noise levels are logarithmically added due to their logarithmic nature

**As per SANS 10103:2008

Table 8-4 - Predicted night-time noise levels at specified receptor locations during the operational phase of the proposed project

Receptor	Current Noise Level (dB(A))	Predicted Noise Level (dB(A))	Cumulative Noise Level (dB(A))*	Change (dB(A))	Estimated Community Response**
Rec 01	59.5	41.2	59.6	+0.1	Little
Rec 02	50.0	38.3	50.3	+0.3	Little
Rec 03	65.7	32.4	65.7	0.0	Little
Rec 04	46.2	29.1	46.3	+0.1	Little
Rec 05	51.1	29.2	51.1	0.0	Little
Rec 06	48.8	34.8	49.0	+0.2	Little

* It is noted that noise levels are logarithmically added due to their logarithmic nature

**As per SANS 10103:2008

A visual output of the modelled results is presented in Figure 8-1. It must be noted that the visual output is associated with the proposed project alone and is not cumulative (i.e. taking the existing background noise levels into account). Only one output plot is presented, representing day and night-time noise levels, as it is understood that the facility will be operational for 24 hours a day. Therefore, day and night-time predictions will be identical.



Highest noise levels are predicted around the WWTP and Hammermill area, as these areas contain the noisiest sources. It is understood that in reality, some of these sources may be contained within acoustic enclosures; however, these model results represent a worst-case scenario, without sources being contained/enclosed. Noise levels decrease as distance from the sources increase, with levels dropping below the industrial guideline level (70 dB(A) (day) and 60 dB(A) (night)) on site. Noise levels at all receptor locations are below the respective urban guideline levels (55 dB(A) (day) and 45 dB(A) (night)).

The proposed activities at the WWTP will not contribute significantly to an increase in the ambient noise levels; the impact is therefore expected to be low and noise-related complaints from receptors are not anticipated. Table 8-5 details the noise impact on surrounding sensitive receptors during the operational phase.

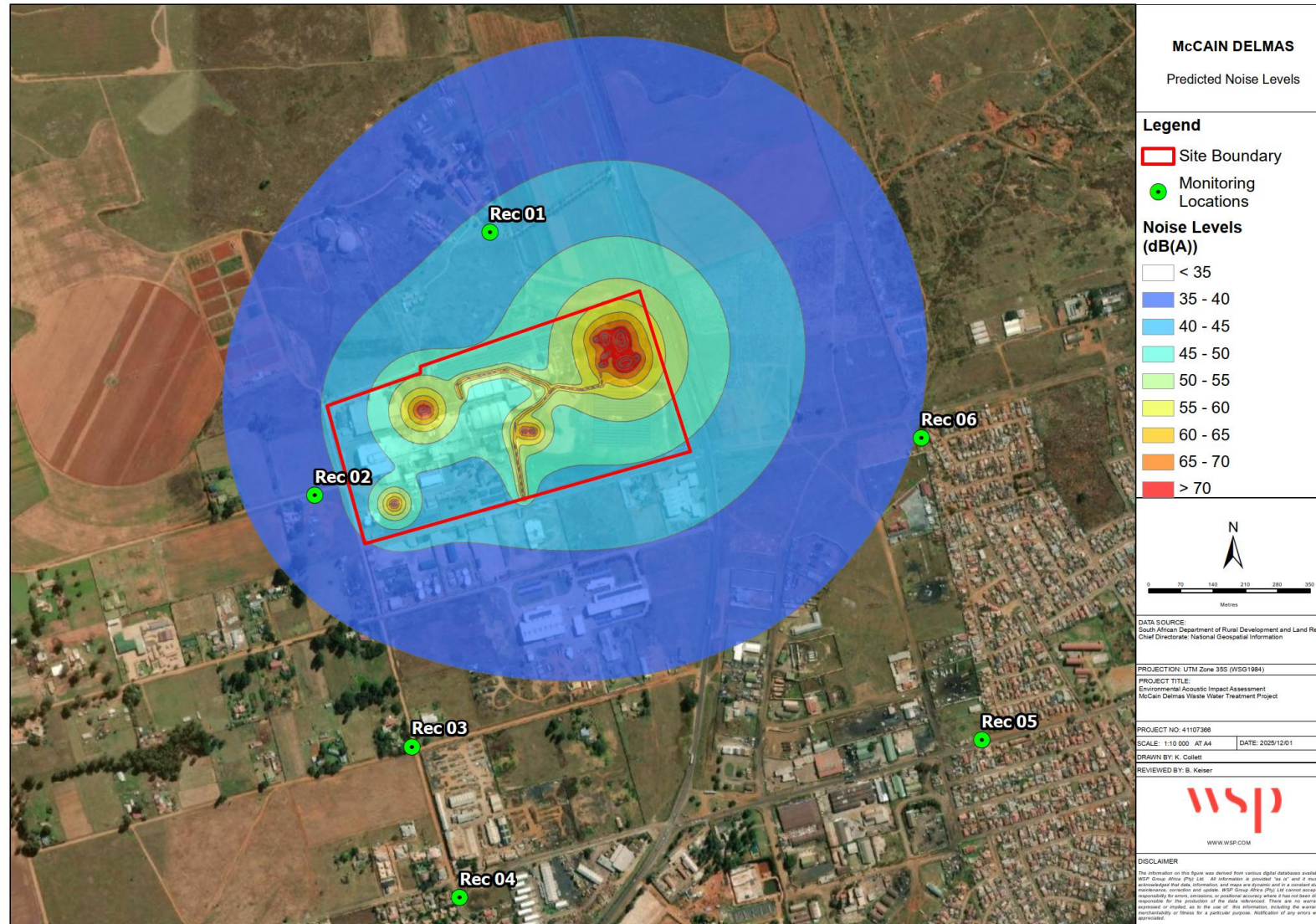


Figure 8-1 - Predicted noise levels during the operational phase of the project

Table 8-5 – Noise impact on surrounding sensitive receptors (operational phase)

Potential Impact: Noise impact on surrounding sensitive receptors	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	3	1	4	3	30	Low	(-)
With Mitigation	2	2	1	4	2	18	Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> Ensure that all equipment is well-maintained to avoid excessive noise generation. When replacing equipment, ensure that equipment with the lowest sound power level specifications is selected, where possible. Suitable mufflers on engine exhausts must be installed. Acoustic enclosures for equipment causing radiating noise must be installed where possible. Equipment must be suitably sized for the proposed task. A mechanism to record and respond to complaints must be developed. 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 correct mitigation strategies. It is noted that the noise climate on site is industrial in nature, with elevated noise levels expected. As such, onsite personnel must ensure compliance with the use of the correct personal protective equipment. 							

8.2.3 DECOMMISSIONING PHASE

The impacts associated with the decommissioning phase will be the same as that of the construction phase.

8.3 GEOTECHNICAL AND DOLOMITE STABILITY

8.3.1 CONSTRUCTION PHASE

The following construction related risks were identified in the geotechnical investigation (Rockland Geoscience (Pty) Ltd, 2023):

- Stability of cuts and embankments: The predominantly loose soil profile provides for unstable conditions.
- Aggressiveness/corrosiveness: Based on the results of pH and soil conductivity tests, the fill and transported soils are expected to be moderately aggressive towards cementitious elements and moderately to highly corrosive towards buried metals and buried concrete and metal elements will require appropriate protection against chemical attack.
- Founding foundations: The low consistency, poor grading and large percentage cobbles and boulders contained in the fill and transported horizons make these horizons vulnerable to large settlements due to settlement under self-weight and foundation loads. Moreover, the fine-grained

sandy matrix of transported soils exhibited pinhole voids suggesting a risk of collapse settlement following an increase in soil moisture content and net loading. Large structures such as the digester tank, which has a planned diameter of about 30m, will stress founding materials to a depth of about 30m, including low stiffness zones that may underlie its footprint potentially inducing excessive settlement.

Potential Mitigation Measures include:

- 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.
- Temporary slopes cut into in situ soils should be battered to 1V:2.5H or shallower.
- Where steeper slopes are desired/required the installation of appropriate lateral support must be conducted.
- 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.

8.3.2 OPERATIONAL PHASE

The following operational phase related risks were identified in the geotechnical investigation (Rockland Geoscience (Pty) Ltd, 2023)

- It is possible that shallow perched water tables may develop on the interface of the transported soils and underlying chert residuum during and after period of intense and sustained rains.
- The site's risk characterisation showed that there is a medium risk for the development of small sized (<2m diameter) sinkholes, medium sized (2m<diameter<5m) sinkholes and large sinkholes (5m< diameter <15) and a low risk for doline development for the non-dewatering scenarios. With the groundwater table within the dolomite residuum, any drawdown of the permanent water table will adversely affect the risk for sinkhole development. The low-density material encountered in RG4 and RG5 indicate a medium to high risk for up to large sinkholes (5m<diameter<15m) and a medium risk for doline development for the dewatering scenarios.

Potential Mitigation Measures include:

- It is proposed that an experienced engineering geologist or geotechnical engineer 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.
- All foundations should be designed to span a sinkhole with a minimum diameter of 5 m.
- 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.
- Implementation of the conceptual storm water plan (WSP, 2025e) developed for the WWTP and groundwater mitigation measures (Section 8.5) will also mitigate the geotechnical risks identified.

8.3.3 DECOMMISSIONING PHASE

No risks applicable to the decommissioning phase have been identified.

8.4 SOIL, LAND USE AND LAND CAPABILITY IMPACT ASSESSMENT

8.4.1 CONSTRUCTION PHASE

The main activities impacting the soil, land capability, soil agricultural potential and land use during the construction phase relate to the site preparation such as vegetation removal and construction of infrastructural units of the facility. The action of vegetation removal and grubbing also removes the portion of the topsoil that generally has the highest soil organic matter levels, and soil microbial diversity. The potential for soil erosion also increases with the soil disturbances that will occur during the construction phase. Additional impacts on the soils anticipated during the construction phase are soil compaction, soil burial/ covering by project infrastructure, as well as potential soil contamination from on-site potential oil leaks from earth moving machinery and trucks.

The new diesel storage tank will be installed within a current operation area. The required containment infrastructure will be constructed, and new tank installed. Accidental spillages of diesel could occur during this phase. If the concrete in the vicinity of the footprint of the new tank is degraded or cracked, accidental spills may impact the soil, with a potential risk of hydrocarbon migration to groundwater.

The significance of these impacts is moderate due to the nature of the activity, and the potential extent thereof. However, with the implementation of appropriate mitigation measures, the significance of the impacts can be reduced to a low significance.

Table 8-6 details the impacts on land capability, soil quality and health, and Table 8-7 details the impacts on soil availability and soil quality.

Table 8-6 – Land Capability, soil quality and health

Potential Impact: Decrease in cultivatable land with agricultural capabilities. Alteration or disruption of existing land utilization in regions undergoing infrastructure development. Erosion-induced soil degradation. Depletion of soil nutrients due to the removal of vegetation and topsoil. Reduction in soil organic matter content during the removal of vegetation.	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	4	1	5	4	4	56	Moderate	(-)
With Mitigation	3	1	3	4	3	33	Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> Limit the extent of soil disturbance to the approved project infrastructural units. Ensure that erosion control measures are implemented to minimise potential soil loss and sediment transport to downgradient wetland area. All wastewater, fuels, oils and hazardous substances must be stored and managed in a manner that prevents contamination of soils and groundwater. 							

Potential Impact: Decrease in cultivatable land with agricultural capabilities. Alteration or disruption of existing land utilization in regions undergoing infrastructure development. Erosion-induced soil degradation. Depletion of soil nutrients due to the removal of vegetation and topsoil. Reduction in soil organic matter content during the removal of vegetation.	Magnitude	Extent	Reversibility	Duration	Probability	Significance	Character
	<ul style="list-style-type: none"> ■ 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. 						

Table 8-7 – Land use (soil availability), soil quality

Potential Impact:	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
<p>Soil burial or soil covering due to the presence various project structures.</p> <p>Compaction of the soil in regions where heavy machinery will be used for constructing the project infrastructure, and related utilities.</p> <p>Increased runoff (leading to erosion) in compacted zones and alteration of natural infiltration processes.</p> <p>Soil contamination resulting from spills of chemicals, including soil sterilization due to cement contaminants at built/ covered areas.</p> <p>Soil contamination from accidental spills of diesel during filling / handling of diesel.</p>								
Without Mitigation	4	2	3	5	4	56	Moderate	(-)
With Mitigation	3	1	3	2	2	18	Low	(-)
Mitigation and Management Measures	<div> <div></div> <div> <p>Ensure that soil covering (paving, and infrastructure) is limited to approved areas.</p> <p>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.</p> </div> </div>							

Potential Impact: Soil burial or soil covering due to the presence various project structures. Compaction of the soil in regions where heavy machinery will be used for constructing the project infrastructure, and related utilities. Increased runoff (leading to erosion) in compacted zones and alteration of natural infiltration processes. Soil contamination resulting from spills of chemicals, including soil sterilization due to cement contaminants at built/ covered areas. Soil contamination from accidental spills of diesel during filling / handling of diesel.							
	Magnitude	Extent	Reversibility	Duration	Probability	Significance	Character
	<ul style="list-style-type: none"> Inspect condition of newly constructed containment (bundling) infrastructure prior to installation of new tank. Ensure that a leakage detection system is installed / or similar system to alert operations in the event of a leak. Regularly inspect tank and bunding for spillages / leaks. 						

8.4.2 OPERATIONAL PHASE

During the operational phase, there is potential for soil contamination from accidental spillages of hazardous waste handled and chemicals used at the WWTP, as well as from incorrect disposal of hazardous chemicals. The significance of this impact was rated as moderate but can be reduced to low if accidental spills of waste material are appropriately handled by the environmental management team.

Regarding the new diesel storage tank, the operational activities which could potentially result in soil impacts, are related to the refilling, and pumping of diesel during routine operations. There is a potential impact on soil from accidental spillages of diesel or leakages of the diesel tank. The condition of the concrete and containment infrastructure around the diesel tank is critical in ensuring that accidental spills or leaks from the diesel storage tanks do not severely impact the soil (beneath the concrete) and result in migration of contaminants to groundwater. Given that the tank will be within an existing covered (compacted and concreted foundation) surface, and within a bunded area, the potential impact on soil was considered moderate before mitigation, and low with implementation of mitigation. The impact rating for soil quality during operational phase is shown in Table 8-8 below.

Table 8-8 – Soil quality

Potential Impact:	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Soil contamination resulting from spills of hydrocarbons and chemicals, including soil sterilization due to cement contaminants at built/ covered areas.								
Soil contamination from accidental spills of diesel during refilling / handling of diesel.								
Without Mitigation	4	2	3	5	3	42	Moderate	(-)
With Mitigation	3	1	3	2	2	18	Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none">■ 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.■ All wastewater, fuels, oils and hazardous substances must be stored and managed in a manner that prevents contamination of soils and groundwater.■ Ensure that personnel are trained in handling accidental spills.■ Regularly inspect tank and bunding for spillages / leaks.■ Ensure that tanks have a leak detection system in place.							

8.4.3 DECOMMISSIONING PHASE

It is understood that the WWTP and new diesel storage tank will be decommissioned at the time when the overall McCain Delmas operation is decommissioned, since both the WWTP and diesel storage tanks are required for supporting manufacturing processes.

It is likely that once the infrastructure is removed from the site, the necessary environmental site assessments will be conducted, including establishing the soil quality status. During decommissioning, the soil is most vulnerable to potential chemical and / waste spillage events. The significance of this impact was rated as moderate but can be reduced to low if accidental spills of waste material, hydrocarbons or chemicals are appropriately handled by the environmental management team during the decommissioning of the plant and diesel storage tanks. The impact rating for soil contamination during the decommissioning phase is illustrated in Table 8-9 below.

Table 8-9 – Soil contamination

Potential Impact: Soil contamination from accidental spills of chemicals from WWTP during demolishing of plant. Soil contamination from accidental spills of diesel during emptying and disposal of diesel tank.	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	4	3	3	5	4	60	Moderate	(-)
With Mitigation	3	1	3	3	3	30	Low	(-)

Potential Impact: Soil contamination from accidental spills of chemicals from WWTP during demolishing of plant. Soil contamination from accidental spills of diesel during emptying and disposal of diesel tank.	Magnitude	Extent	Reversibility	Duration	Probability	Significance	Character
Mitigation and Management Measures	<ul style="list-style-type: none"> 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. Ensure that personnel are trained in handling accidental spills. 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). 						

8.5 GROUNDWATER IMPACT ASSESSMENT

8.5.1 GROUNDWATER QUANTITY

McCain Delmas Site utilise groundwater for their daily operations from three (3) boreholes situated on the site area. If additional groundwater is used during the construction phase of the WWTP, it is expected that would increase and could change the volume of groundwater in the aquifer storage (e.g. lowering of water table). This in turn could impact on groundwater user's boreholes and fountains (if any) and increase the risk of subsidence and sinkhole formation due to excessive lowering of the water table within the karst formation. Sinkholes primarily occur due to one of two factors, namely concentrated ingress of water or extensive abstraction of groundwater. The interaction between groundwater and soils in nature causes soil loss, which is the mechanism of sinkhole formation. The impacts on groundwater quantity are rated as very low due to the localised extent and short duration of the impact, see Table 8-10.

Table 8-10 – Impacts on Groundwater Quantity during the construction and operational phases

Potential Impact: Ponding of surface water Increased groundwater abstraction	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	2	1	1	2	12	Very low	(-)
With Mitigation	1	1	1	1	2	8	Very low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> Implement effective stormwater systems to prevent concentrated ingress of water. Storm water infrastructure should be designed and maintained to prevent erosion, sedimentation and the discharge of polluted runoff into surrounding natural areas. Prevent extensive abstraction of groundwater. 							

8.5.2 GROUNDWATER QUALITY

During construction phase, earthworks may remove soil cover reducing the travel time for any potential source of contamination to migrate into the aquifer, potentially impacting on the groundwater. The WWTP will in essence store wastewater generated from waste material and liquid, either obtained from waste products (as feed) or as water production as effluent. The proposed engineering designs indicate the waste will be kept in specially designed storage holding areas and tanks. The WWTP storage facilities and tanks are designed to prevent any seepage or leakage from the waste to enter groundwater and the environment. However, leakage could occur causing localised contamination of the groundwater. Furthermore, the expansion of the diesel storage facility should not pose any significant risk on the groundwater apart from accidental spillages or leakage. The impacts on groundwater quality are rated as very low due to the localised extent, low magnitude and short duration of the impact, see Table 8-11.

Table 8-11 – Impacts on the Groundwater Quality during the construction and operational phases

Potential Impact: Leakage from construction activities, the WWTP or diesel storage tank could occur causing localised contamination of the groundwater	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	2	1	1	2	12	Very low	(-)
With Mitigation	1	1	1	1	2	8	Very low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> Implement lined and roofed storage facilities as per engineering designs. Prevent and control surface runoff in case of spillage or leakage of waste storage facilities. Implement effective stormwater systems. Control any localised spillage, such as hydrocarbons, from earthworks machines. 							

8.6 TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT

Although the project area is of low sensitivity in terms of the presence of any intact, natural habitats or vegetation of importance, or the support of plant and animal species of conservation concern, certain aspects of the Project have the potential to impact any species utilising the area. Potential impacts include:

- Direct loss and disturbance of remaining habitat;
- Further establishment and spread of alien and invasive species; and
- Injury and mortality of faunal species.

Given the low sensitivity of the terrestrial biodiversity, and plant and animal species receptors, these impacts have been assigned low significance, both with and without mitigation and management. However, management actions are recommended to ensure that the impact of the project activities on species and remaining habitats is minimised. Refer to Table 8-12 to Table 8-14 below.

8.6.1 CONSTRUCTION PHASE

8.6.1.1 Vegetation clearing

Table 8-12 – Impacts of vegetation clearing

Potential Impact: Loss of modified habitat for commonly occurring fauna and flora	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	1	1	2	3	18	Low	(-)
With Mitigation	2	1	1	2	3	18	Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> Avoid undisturbed areas, to the extent possible. Indigenous vegetation clearing should be restricted to the proposed project footprints only, with no clearing permitted outside of these areas. 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. Ensure that all waste material is removed. All disturbed areas are to be rehabilitated and reseeded where necessary. 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. An effective rehabilitation plan must be designed and implemented, ensuring that all residual environmental impacts are addressed. 							
Potential Impact: Faunal mortality	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	1	1	3	3	21	Low	(-)
With Mitigation	2	1	1	3	3	21	Low	(-)
Mitigation and Management Measures	<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. 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. 							

Potential Impact: Spread of Alien Invasive Plant species	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	1	1	3	3	21	Low	(-)
With Mitigation	2	1	1	3	4	28	Low	(-)
Mitigation and Management Measures	<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. Existing stands of alien and invasive species should be removed from the project area prior to commencement of construction. All declared alien invasive plants species must be identified and managed throughout the project lifecycle and continuing thereafter. 							

8.6.2 OPERATIONAL PHASE

8.6.2.1 Operation of Infrastructure

Table 8-13 – Operation of Infrastructure

Potential Impact: Continued Spread of Alien Invasive Plant species	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	1	1	3	3	21	Low	(-)
With Mitigation	2	1	1	3	3	21	Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> An alien and invasive species management plan should be developed and implemented 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. 							

Potential Impact: Further disturbance of modified habitat for commonly occurring fauna and flora	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	1	1	3	3	21	Low	(-)
With Mitigation	2	1	1	3	3	21	Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> It is recommended that a speed limit of 40 km/h is implemented on all maintenance roads running through the study area to minimise risk to fauna from vehicles. 							

8.6.3 DECOMMISSIONING PHASE

8.6.3.1 Closure/Removal of Infrastructure

Table 8-14 – Impacts on spread of Alien invasive species

Potential Impact: Spread of Alien Invasive Plant species	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	1	1	2	3	18	Low	(-)
With Mitigation	2	1	1	2	3	18	Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> An alien and invasive species management plan should be developed and implemented 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. 							

8.7 SOCIAL IMPACT ASSESSMENT

8.7.1 CONSTRUCTION PHASE

The WWTP's construction phase is relatively short-term, is labour-intensive, and there is potential to influence the social environment. The activities required are the construction camp, site offices, material laydown area, and foundations for the WWTP. Limited activities are associated with the proposed diesel tank installation, especially since the facility will be containerised. Table 8-15 - Table 8-20 summarises the impact assessments during the construction phase.

8.7.1.1 Impacts on Job creation

The construction phase for the WWTP will employ predominantly low-skilled to semi-skilled people, predominantly local South Africans. Little to no additional employment opportunities are expected for the proposed diesel tank installation; existing McCain staff will likely assist with the installation.

There will be a localised social benefit to the communities in the area, considering the relatively high unemployment levels and few employment opportunities in the local municipal area. However, the majority of skilled positions are likely to be filled by individuals from outside the local area due to the low skill levels in the area.

The potential for local businesses to benefit from the project is probably constrained due to the regional financial diversification. Therefore, it is likely that contractors and engineering firms based outside of the local municipal area will reap most of the benefits. The construction phase will also be advantageous to the area's service industry. The potential benefits would be related to the site's transportation, security, cleaning, catering, and lodging for the construction employees. However, this potential benefit will occur over the short term.

Based on the above, the job creation opportunities associated with the project are likely to result in a positive impact of low significance. Should the recommended enhancement measures be implemented, it is anticipated that this impact could be increased to moderate.

Table 8-15 – Impacts on job creation

Potential Impact: Job Creation	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	3	2	3	2	3	30	Low	(+)
With Mitigation	3	2	3	2	4	40	Moderate	(+)
Mitigation and Management Measures	<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; Local communities should be given special consideration regarding the benefits arising from the Project, as they will be most affected; 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; Resources required during construction should be sourced preferably from local businesses. Accommodation needed for contractors should favour local guesthouses and hotels; and Wherever possible, the hiring process should promote gender equality and women's employment; The proponent should liaise with the municipality regarding establishing a database of local companies, specifically BBBEE companies, which qualify as potential 							

Potential Impact: Job Creation	Magnitude	Extent	Reversibility	Duration	Probability	Significance	Character
						service providers (e.g., construction companies, catering companies, waste collection companies, security companies, etc.) before the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.	

8.7.1.2 Impacts on the influx of job seekers

Based on a report by Statistics South Africa in 2023, the unemployment rate during the first quarter of the year stood at 32.9% (Statistics South Africa, 2023; in WSP, 2025d). This unemployment rate poses a significant challenge for job seekers who may feel compelled to relocate to areas experiencing development to secure employment opportunities. However, such a move can potentially negatively affect the local community. There will also be added pressure on the existing municipal infrastructure and services. This pressure includes an increase in traffic, water usage and housing demands. Additionally, the influx of people from different cultures and languages may impact the local culture and family structures, leading to a sense of displacement for locals. The project's construction has the potential to draw job seekers to the project area, although to a limited extent, given that the construction activities will be undertaken within McCain's existing facility, over the short term.

The influx of labour could result in increasing the number of informal dwellings and possibly informal settlements in the area. It is unlikely that all these people will be employed during construction, thus resulting in increased unemployment. The increased number of unemployed people may lead to increased social ills such as crime, alcohol abuse, Gender Based Violence, and growing pressure on local resources, infrastructure and social services.

Construction activities can also take much longer than initially planned at the beginning of a project. These delays can result in extended stays away from home for the labourers, generally men, which may lead to increased prostitution.

The significance of the impact of influx of job seekers to the local municipal area is anticipated to be a negative impact of moderate significance pre-mitigation but could decreased to low, with the implementation of the recommended mitigation measures.

Table 8-16 – Impacts on population influx

Potential Impact: Population Influx	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	3	3	3	2	4	48	Moderate	(-)
With Mitigation	2	2	2	2	2	16	Low	(-)
Mitigation and Management Measures	<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 (EMS 7.4.1); ■ 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; ■ No recruitment should occur at the Project gate to prevent informal settlements around the Project site; and ■ Increased security in the Project area should be provided to regulate access to the site and prevent establishment of informal settlements. 							

8.7.1.3 Impacts on procurement from local businesses

The Project and its employees will require various goods and services to support construction activities. Goods and services will include construction supplies and contracting services like transportation, equipment rental, and skilled labour.

The Project will bolster the local economy by involving local suppliers and service providers. Involving local suppliers and service providers will stimulate economic growth by creating job opportunities, increasing demand for local products and services, and enabling the development of small and medium-sized enterprises. Additionally, the increased economic activity can lead to improved infrastructure, enhanced community services, and overall economic growth in the region.

Procurement from local business is likely to result in a positive impact of low significance. Should the recommended enhancement measures be implemented, it is anticipated that this impact could be increased to moderate.

Table 8-17 – Impacts on procurement from local businesses

Potential Impact: Procurement from local businesses	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	2	2	2	2	16	Low	(+)
With Mitigation	2	2	3	4	3	33	Moderate	(+)
Mitigation and Management Measures	<ul style="list-style-type: none"> The Project could partner with local suppliers through procurement programmes to develop local suppliers; and Procurement programmes should prioritise local procurement for locally available goods and services. 							

8.7.1.4 Impacts on community livelihood

Any impacts on agriculture potential and on groundwater as a result of the Project could impact on the livelihood of local communities.

The soil impact study (Soil Advisory Services, 2025) indicates that the eastern portion of the proposed WWTP site has high agricultural potential but given the relatively small extent of the high capability area, and the fact that the land is located within the existing McCain property, commercial dryland cropping would not be feasible.

The groundwater impact study (WSP, 2025a) indicates that there are a number of groundwater users in the study area, but that the potential impact of the proposed WWTP and diesel tank installation on the groundwater regime is anticipated to be very low.

Based on the above, it is anticipated that the potential impacts of the Project on community livelihood are low before mitigation and very low after mitigation.

Table 8-18 – Impacts on community livelihood

Potential Impact: Community livelihood	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	3	5	4	2	28	Low	(-)
With Mitigation	2	3	5	4	1	14	Very Low	(-)
Mitigation and Management Measures	It is recommended that the mitigation measures contained in the soil and groundwater impact studies be implemented. The existing environmental complaints procedure (EMS 7.4.1) should also be used for the project.							

8.7.1.5 Intrusive impacts

The proposed construction activities could result in noise and dust which could impact on people living/working within close proximity to the site. Some of the surrounding receptors are located less than 600 m from the proposed Project site. The air quality (WSP, 2025b) and noise (WSP, 2025c) study reports indicate that the potential impacts of the construction of the proposed diesel tank installation and WWTP on the surrounding sensitive receptors are anticipated to be very low to low.

No impacts on cultural heritage resources are anticipated as a result of the proposed construction activities (APAC consulting, 2025).

Table 8-19 – Impacts on intrusive impacts

Potential Impact: Intrusive impacts	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	3	5	4	2	28	Low	(-)
With Mitigation	2	3	5	4	1	14	Very Low	(-)
Mitigation and Management Measures	It is recommended that the mitigation measures contained in the air quality and noise impact studies be implemented. The existing environmental complaints procedure (EMS 7.4.1) should also be used for the project							

8.7.1.6 Impacts on community, health, safety and security

The project construction workers could damage farm fences and buildings, increase crime, livestock theft, and farm produce theft. While the creation of jobs is positive, it may also introduce changes in lifestyle, such as multiple sexual relations, which could lead to a higher infection rate of HIV/STIs within the project area. It is recommended that as many local un-skilled and semi-skilled people are hired as possible. These employees will be local community members, and family networks will be kept intact will lower the risks of social ills.

It is anticipated that the impact of the project's construction activities on community health, safety and security will be low pre-mitigation and very low post mitigation.

Table 8-20 – Impacts on community, health, safety and security

Potential Impact: Community, health, safety and security	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	3	3	1	2	18	Low	(-)
With Mitigation	2	2	1	2	2	14	Very Low	(-)

Potential Impact: Community, health, safety and security	Magnitude	Extent	Reversibility	Duration	Probability	Significance	Character
Mitigation and Management Measures	<ul style="list-style-type: none"> The Project should employ security personnel on site during construction; The Project should include monthly health talks and coordinate health and safety campaigns to educate personnel on general health, safety and security issues; The proponent and the contractor should implement an HIV/AIDS and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase; The contractor should transport workers to and from the site daily; The contractor should supervise and manage the entrance and exit of the construction site to ensure no interaction with communities at the site; and No construction workers, except security personnel, should be permitted to stay overnight on the site. 						

8.7.2 OPERATIONAL PHASE

The project activities will be operational during this phase. See Table 8-21 - Table 8-24 for the operational phase's summary of the Impact Assessment.

8.7.2.1 Impacts on Job creation

McCain has opted to outsource the operation of the WWTP to a specialist contractor; therefore, the day-to-day management and staffing will be the responsibility of the contractor. The contractor will require skilled resources to operate the WWTP on a daily basis. It is expected that existing personnel at the McCain Delmas Plant will operate the installed diesel tank.

Based on the above, the job creation opportunities during the operational phase is therefore likely to result in a positive impact of low significance, pre and post mitigation.

Table 8-21 – Impacts on job creation during operational phase

Potential Impact: Job Creation	Magnitude	Extent	Reversibility	Duration	Probability	Significance	Character
Without Mitigation	3	2	3	2	2	20 Low	(+)
With Mitigation	3	2	3	2	3	30 Low	(+)
Mitigation and Management Measures	<ul style="list-style-type: none"> The operations contractor should prefer appropriate subcontractors in the surrounding communities, followed 						

Potential Impact: Job Creation	Magnitude	Extent	Reversibility	Duration	Probability	Significance	Character
	by those in the municipal area and then those outside the province; <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; and Wherever possible, the hiring process should promote gender equality and women's employment. 						

8.7.2.2 Impacts on community livelihoods

Potential soil contamination from accidental spillages at the proposed WWTP and diesel tank installation could impact on agricultural potential of the land and on groundwater resources. Given the low probability of occurrence, relatively small volume of material that could spill, and the fact that any impacts would largely be contained to the site and its immediate surrounds, it is anticipated that impacts on community livelihoods as a result of the WWTP and diesel tank operations will be low pre-mitigation and very low post-mitigation.

Table 8-22 – Impacts on community livelihoods

Potential Impact: Community livelihoods	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	3	5	4	2	28	Low	(-)
With Mitigation	2	3	5	4	1	14	Low	(-)
Mitigation and Management Measures	It is recommended that the mitigation measures contained in the soil and groundwater impact studies be implemented. The existing environmental complaints procedure (EMS 7.4.1) should also be used for the project.							

8.7.2.3 Intrusive impacts

The air quality impact study (WSP, 2025b) indicates that during the operational phase, the main emission sources from the WWTP will include the flare. Since receptors are located in close proximity of the facility, impact significance is rated moderate pre-mitigation, but can be reduced to low, should the recommended mitigation measures be implemented. No impacts on air quality are expected from the installed diesel tank.

The noise impact study (WSP, 2025c) indicates that noise sources from the proposed WWTP will include various pumps, blowers and a biogas flare, as well as additional vehicles associated with the

Project. Since receptors are located in close proximity of the facility, impact significance is rated moderate pre-mitigation, but can be reduced to low, should the recommended mitigation measures be implemented. No impacts on noise are expected from the installed diesel tank, since the tank will be located towards the centre of the existing McCain Delams Plant site, away from any receptors, and minimal noise is expected to be associated with the tank.

Table 8-23 – Intrusive impacts

Potential Impact: Intrusive impacts	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	3	3	1	4	36	Moderate	(-)
With Mitigation	2	2	1	4	2	18	Low	(-)
Mitigation and Management Measures	It is recommended that the mitigation measures contained in the air quality and noise impact studies be implemented. The existing environmental complaints procedure (EMS 7.4.1) should also be used for the project.							

8.7.2.4 Impacts on community health, safety and security

Given that the operation of the WWTP will be outsourced to a specialist contractor, no impacts on community health, safety and security are anticipated.

8.7.3 DECOMMISSIONING PHASE

The decommissioning phase is a phase in the project lifecycle where the project's operational activities cease. Refer to Table 8-24 for a summary of the decommissioning phase social impact assessment.

8.7.3.1 Loss of employment

McCain has opted to outsource the operation of the WWTP to a specialist contractor; therefore, the day-to-day management and staffing will be the responsibility of the contractor. As a result, McCain will not directly influence or control the operational aspects of the plant and therefore no McCain employees will be directly affected.

8.7.3.2 Intrusive impacts

It is anticipated that potential decommissioning phase impacts on air quality and noise will be similar to the construction phase. It is recommended that the mitigation measures contained in the air quality and noise impact studies be implemented.

Table 8-24 – Intrusive impacts

Potential Impact: Intrusive impacts	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	3	5	4	2	28	Low	(-)
With Mitigation	2	3	5	4	1	14	Very Low	(-)
Mitigation and Management Measures	The existing environmental complaints procedure (EMS 7.4.1) should also be used for the project. Wherever possible, the hiring process should promote gender equality and women's employment.							

8.8 PALAEONTOLOGICAL IMPACT ASSESSMENT

It is only during the Construction Phase where there could be any impact on palaeontological heritage because this is when the ground will be broken for excavations for foundations and infrastructure. Fossils occur in the ground. The operational and de-commissioning phases will not affect palaeontology.

8.8.1 CONSTRUCTION PHASE

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The geological structures suggest that the rocks are the correct age and type to preserve fossils. Table 8-25 details the impact rating during the construction phase.

Table 8-25 – Impacts on palaeontology during the construction phase

Potential Impact: Palaeontology	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	2	1	5	4	2	24	Low	(-)
With Mitigation	1	1	3	1	2	12	Very Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> Implement the chance finds procedure should any fossils be identified during excavations. 							

8.9 HERITAGE IMPACT ASSESSMENT

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. The only remains recorded were very recent and constructed by McCain Delmas in the study area. These included the remains of braai facilities, as well as a parking area.

However, as there is always a possibility of sites, features and material being missed as a result of various factors it is also recommended that a Chance Finds Procedure be drafted and implemented for the proposed McCain Delmas WWTP development. The chance finds procedure should be included in the construction EMP.

Table 8-26 – Impacts on heritage during the construction phase

Potential Impact: Impact on heritage resources	Magnitude	Extent	Reversibility	Duration	Probability	Significance		Character
Without Mitigation	1	1	1	1	1	5	Very Low	(-)
With Mitigation	1	1	1	1	1	5	Very Low	(-)
Mitigation and Management Measures	<ul style="list-style-type: none"> Implement the chance finds procedure should any heritage resources be identified during excavations. The chance finds procedure should be included in the construction EMP. If any archaeological or cultural heritage resources, including unmarked human burials, 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 called to investigate the finds, and the SAHRA should be notified. 							

8.10 CUMULATIVE IMPACT ASSESSMENT

The EIA Regulations (2014, as amended) require the consideration of the “cumulative impact”, which includes the ‘reasonably foreseeable future impact of an activity’. Cumulative impacts must be considered when assessing the risk and potential impacts of a particular project. Cumulative impacts are those resulting from the incremental effects of a proposed project when added to present and reasonably foreseeable future actions, regardless of who undertakes them. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.

Within the context of the proposed project, the proposed WWTP and diesel tank could contribute to existing impacts associated with the McCain Delmas facility, given that these activities will be undertaken within the facility’s boundaries.

8.10.1 AIR QUALITY

The cumulative impacts may be primarily associated with nuisance impacts during the operational phase. The cumulative impacts were assessed under Scenario 2 used in the dispersion modelling exercise, which accounted for both the existing and proposed facility operations. The cumulative impact was deemed to be of very low significance post-mitigation.

8.10.2 NOISE

The cumulative impacts may be primarily associated with nuisance impacts during the operational phase, considering the current industrial environment in which the project will be located. Given the existing daytime baseline noise levels (which are below the guideline level for urban areas) and the

minor contribution of noise from the proposed activities (predicted between 0.0 and 0.7 dB(A)), it is unlikely that the proposed activities project will contribute to existing cumulative impacts. For night-time, it is also not expected that the proposed project activities will contribute to existing cumulative impacts, given the minor contribution of noise predicted (0.0 and 0.3 dB(A)), even though baseline levels are currently exceeding the guideline level for urban areas.

8.10.3 SOIL, LAND USE AND LAND CAPABILITY

Loss of land of agricultural potential will contribute to a potential cumulative impact. However, considering the current condition of the proposed site location, the industrial nature of the activities on site and the small extent of land with agricultural potential to be used, the proposed activities will not currently have any cumulative impact on the loss to agricultural land use.

8.10.4 GEOTECHNICAL AND DOLOMITE STABILITY

Should the proposed project activities result in concentrated ingress of water or extensive abstraction of groundwater, this could increase the likelihood of occurrence of sinkholes, especially in the WWTP footprint area.

8.10.5 GROUNDWATER

Cumulative impacts include the contribution of the project activities to the overall deterioration of groundwater quality and groundwater level of the aquifer. Considering the insignificant risks posed by the project, cumulative impacts are not considered significant.

8.10.6 TERRESTRIAL BIODIVERSITY

As the impacts to the biological environment have been identified as insignificant, no cumulative impacts are expected.

8.10.7 SOCIAL

Given the nature and extent of the proposed activities, it is not expected that any of the activities will contribute significantly to existing social impacts associated with the McCain Delmas Plant. Should the biogas produced from the proposed WWTP be used to replace the coal feed to the existing facility's boilers, this could result in improved air quality conditions for the site and nearby receptors.

8.10.8 PALAEOLOGY

Considering the insignificant risk, with no evidence of fossils present, no cumulative impacts are expected.

8.10.9 HERITAGE

Considering the insignificant risk, with no heritage resources within the project area, no cumulative impacts will arise.

9 ENVIRONMENTAL IMPACT STATEMENT

The essence of any impact assessment process is aimed at ensuring informed decision-making, environmental accountability, and to assist in achieving environmentally sound and sustainable development. In terms of NEMA, the commitment to sustainable development is evident in the provision that "*development must be socially, environmentally and economically sustainable.... and*

requires the consideration of all relevant factors". NEMA also imposes a duty of care, which places an obligation on any person who has caused, is causing, or is likely to cause damage to the environment to take reasonable steps to prevent such damage. In terms of NEMA's preventative principle, potentially negative impacts on the environment and on people's environmental rights (in terms of the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996) should be anticipated and prevented, and where they cannot be prevented altogether, they must be minimised and remedied in terms of "reasonable measures".

Potential impacts have been identified from the findings of the specialist studies commissioned particularly for the proposed project.

Mitigation measures have been developed for identified impacts and are presented within the EMPr (Appendix E). The identification and development of appropriate mitigation measures have been informed by best practice principles, experience, and the relevant legislation (where applicable).

Considering the findings of the respective studies, no fatal flaws were identified for the proposed project. Should the avoidance and mitigation measures prescribed be implemented, the significance of the considered impacts for all negative aspects pertaining to the environmental aspects is expected to be **medium** to **low**. It is thus the opinion of the EAP that the project can proceed and that all the prescribed mitigation measures and recommendations are considered by the issuing authority.

The draft BAR was subjected to a public review undertaken in accordance with the requirements of NEMA, with every effort made to include representatives of all stakeholders within the process. The BAR was subsequently updated and finalised, taking into consideration all comments received during the public review period before being submitted to the CA for consideration.

9.1 IMPACT SUMMARY

A summary of the identified impacts and corresponding significance ratings for the proposed project is provided in Table 9-1 below. With the implementation of suitable mitigation measures, negative impacts can be reduced to Low – Very Low, and with enhancement measures, some of the positive impacts can be increased to Moderate.

Table 9-1 – Impact 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	(-)

Aspect	Impact Description	Phase	Without Mitigation		With Mitigation	
			Significance	Status	Significance	Status
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	(-)
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	(+)

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

9.3 SPECIALIST CONCLUSIONS

9.3.1 AIR QUALITY

With the inclusion of the biogas engine, aeration basin and the diesel tank, predicted concentrations for all air quality pollutants are unlikely to significantly affect the surrounding environment. Peak concentrations across all pollutants occur either within the operational boundary or adjacent to the facility's fenceline. Without mitigation, the risks for the project are considered Low, with moderate magnitude, limited extent, and partial reversibility over the medium term. With mitigation measures in place, both the magnitude and likelihood of occurrence are reduced, resulting in a Very Low residual risk.

9.3.2 NOISE

Daytime noise levels at all receptor locations are predicted to increase by between 0.0 and 0.7 dB(A) with the operation of the project, resulting in "little" community/group response. Night-time noise levels at all the receptor locations are predicted to increase by between 0.0 and 0.3 dB(A), also resulting in

“little” community/group response. It is noted that such increases at these locations (during both day and night) are well below the 5 dB(A) threshold for annoyance as per the Nkangala District Municipality Air Quality Management By-Law and as such, these increases are likely to go unnoticed. Based on both the day and night-time results presented here, acoustic impacts of the operation of the proposed project are Low and noise-related complaints from receptors are not anticipated.

9.3.3 GEOTECHNICAL AND DOLOMITE STABILITY

Should the proposed project activities result in concentrated ingress of water or extensive abstraction of groundwater, this could increase the likelihood of occurrence of sinkholes, especially in the WWTP footprint area.

9.3.4 SOIL, LAND USE AND LAND CAPABILITY

From a soil assessment perspective, the proposed footprint of the WWTP can be divided into two portions, namely, the fill-material area (western portion) and the uncovered, Hutton soils (eastern portion). The fill-material was characterised as part of the geotechnical investigation of the site and was confirmed to contain mainly excavated soil and rocks from the construction activities at the McCain Delmas operation (north of the proposed WWTP footprint). The soils along the eastern portion of the project site are characterised by reddish brown, friable, sandy loam topsoil, gradually transitioning into the friable, medium sandy loam apedal B horizon. Inherently these soils have a high land capability (i.e., very few limitations to dryland cropping). However, given the relatively small extent of this high land capability land, commercial dryland cropping would not be economically feasible. The historical images of the proposed WWTP footprint do not show distinct land uses related to commercial cropping. The land could however historically have been used for grazing, or smaller scale crop production (though not visible from historic imagery), given the high land capability of the uncovered portion of the site.

The key anticipated impacts on the soil, land capability and land use due to the project activities mainly affect soil quality, soil quantity, land use, and land capability and are anticipated to be of Moderate significance. However, with the implementation of appropriate mitigation measures the significance of the impacts can be reduced to Low.

9.3.5 GROUNDWATER

Although the WWTP and associated facilities and diesel storage tank are designed to prevent any seepage or leakage from the waste/wastewater to groundwater and to the environment, accidental spillages or leakages could occur causing localised contamination of the groundwater. Should water supply for construction be sourced from the on-site boreholes, excessive abstraction could result in lowering of water levels which in turn could impact on surrounding groundwater users and increase the risk of subsidence and sinkhole formation within the karst formation.

9.3.6 TERRESTRIAL BIODIVERSITY

Due to its transformed and degraded habitat and lack of very high sensitivity features, the study area is of a low sensitivity for terrestrial ecosystems, plants and animals. The proposed development will not have a significant impact on sensitive terrestrial ecosystems.

9.3.7 SOCIAL

The study findings show that the project will potentially positively impact the community, including employment and economic benefits, especially should the recommended enhancement measures be

implemented. The potential negative impacts include influx of job seekers, loss to agricultural land, impacts on groundwater users, impacts on community health, safety and security and impacts on air quality and noise, but all identified impacts can be mitigated to Low or Very Low.

9.3.8 HERITAGE

The literature review indicates that there are some cultural heritage (archaeological & historical) sites and features in the larger geographical area within which the study area falls, but none in the specific development area footprint. No Stone Age, Iron Age or Historical Age sites, features or material were identified in the study and proposed development area during the field-based assessment. The only remains recorded were very recent and constructed by McCain Delmas in the area. These included the remains of braai facilities, as well as a parking area. The impact of the proposed development on cultural heritage in the area is deemed to be Very Low.

9.3.9 PALAEOLOGY

Based on the site visit observations and the lack of any previously recorded fossils from the area, it is extremely unlikely that any fossils would be preserved in the overlying soils of the Quaternary. Outcrops of the same formation in other parts of the country have trace fossils so there is a chance that they also occur in this area. The site visit and walk through, however confirmed that there were no fossils in the project footprint. The impact on the palaeontological heritage would be Low pre-mitigation and Very Low post-mitigation.

9.4 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 9-1. No buffers or exclusion zones were recommended by the specialists.

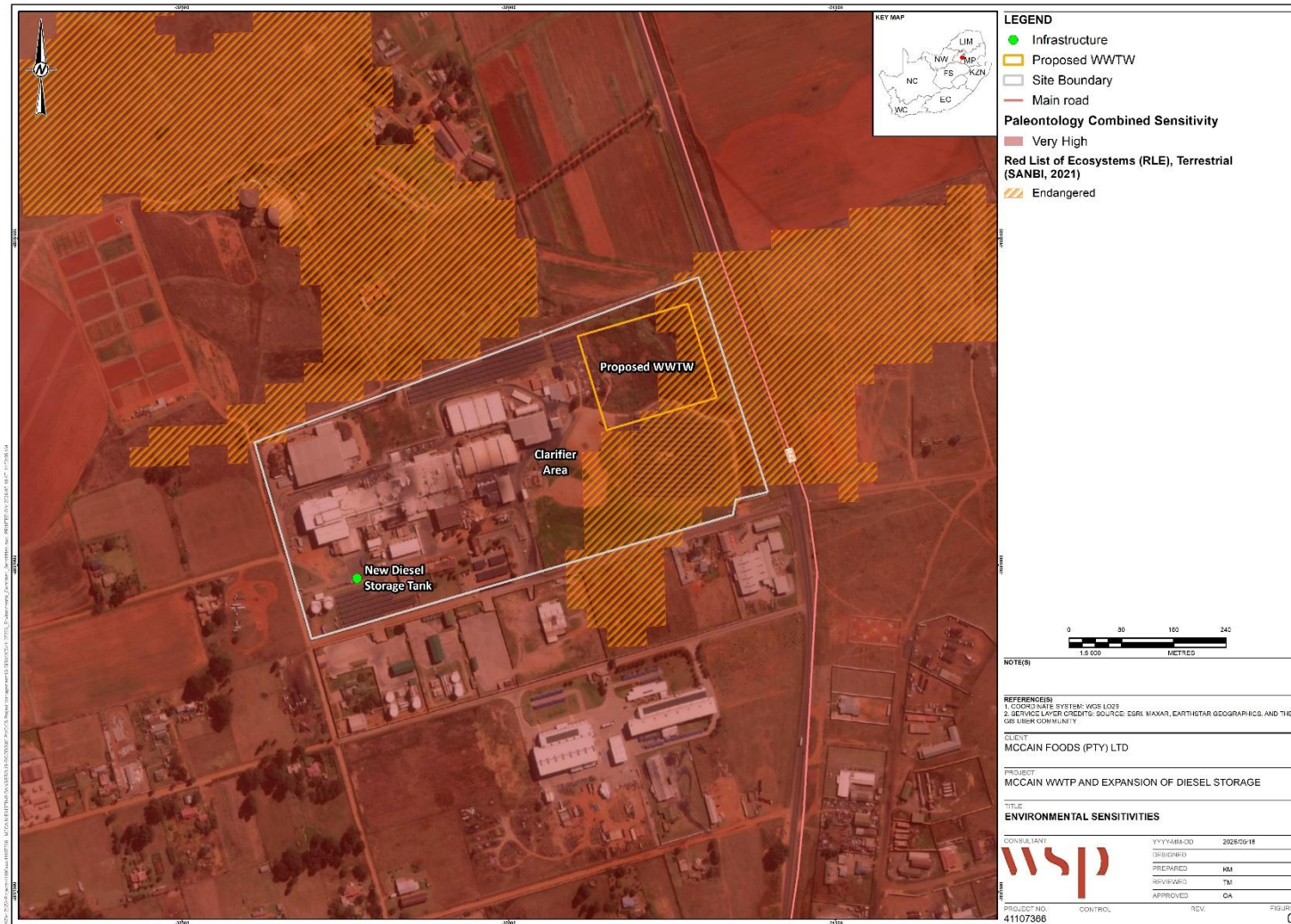


Figure 9-1 - Environmental sensitivity map / final site layout

9.5 CONDITIONS AND RECOMMENDATIONS

9.5.1 GENERAL

The following general aspects are recommended to be included as conditions of authorisation:

- The EMPr and BAR mitigation measures must be adhered to.
- The final EMPr must form part of all contractual documents with contractors during the construction and operational phases of the project.
- A dedicated Environmental Control Officer (ECO) must be appointed to ensure compliance to all EA conditions and EMPr commitments throughout the construction phase.
- Applications for all relevant and required permits must be submitted prior to construction.
- Recommended monitoring programmes must be adhered to.

The following specialist recommendations have been made in respect of the project:

9.5.2 AIR QUALITY

The following key measures have been recommended for the operational phase:

General:

- Maintain appropriate operational controls and adhere to manufacturer stipulated repair and maintenance requirements for all equipment.
- 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.

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.

Coal handling and storage:

- General housekeeping, including the regular cleaning of machinery and the areas around the coal bunker to remove deposited particles to minimise the load available for entrainment during high wind speed events.

WWTP:

- Investigate the feasibility of developing a Vegetative Environmental Buffer (VEB) along the eastern boundary of the proposed development site. A VEB will 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. WSP recommends the use of 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.

- Masking agents offer an additional odour neutralisation option should complaints arise despite the above recommendation. The efficacy of commercial additives varies widely, and local options can be investigated.
- Complaints and any actions arising from a complaint must be recorded in complaints register maintained by site management. If required, fenceline measurements of H₂S can be initiated if complaints arise, which will provide a real-time indicator of odour impact.
- Warning communities to expect potential odour events during upset conditions (e.g. during desludging or when extended maintenance is scheduled) will 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.

9.5.3 NOISE

The following key measures have been recommended for the construction phase:

- Planning 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:
 - Proposed working times.
 - Anticipated duration of activities.
 - Explanations on activities to take place and reasons for activities.
 - Contact details of a responsible person on site should complaints arise.
- When working near a potential sensitive receptor, limit the number of simultaneous activities to a minimum as far as possible.
- Selecting equipment with the lowest possible sound power levels.
- Ensuring equipment is well-maintained to avoid additional noise generation.
- Avoiding unnecessary revving of engines and switching equipment off when not required.
- Using rubber linings in, for example, chutes and dumpers to reduce impact noise.
- Using noise control devices, such as temporary noise barriers and deflectors for high impact activities, and exhaust muffling devices for combustion engines.
- Minimising drop height of materials or lowering materials whenever practical instead of dropping.
- Starting up plant and vehicles sequentially rather than simultaneously.
- Installing acoustic enclosures for equipment causing radiating noise, where practical.
- Reducing any project traffic through community areas where possible.
- Developing a mechanism to record and respond to complaints.
- Ensuring all on-site personnel are equipped with the correct personal protective equipment including noise control hearing devices.

The following key measures have been recommended for the operational phase:

- Ensuring equipment is well-maintained to avoid excessive noise generation.

- When replacing equipment, ensure that equipment with the lowest sound power level specifications is selected, where possible.
- Installing suitable mufflers on engine exhausts.
- Installing acoustic enclosures for equipment causing radiating noise, where possible.
- Equipment must be suitably sized for the proposed task.
- Developing a mechanism to record and respond to complaints.
- Should any complaints arise, annual fenceline noise monitoring campaigns should be established to determine the source of such noise, which will allow for the implementation of correct mitigation strategies.
- It is noted that the noise climate on site is industrial in nature, with elevated noise levels expected. As such, on-site personnel must ensure compliance with the use of the correct PPE.

9.5.4 GEOTECHNICAL AND DOLOMITE STABILITY

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.

9.5.5 SOIL, LAND USE AND LAND CAPABILITY

The following recommended monitoring programme will provide guidance on the potential impacts that require monitoring, the functional requirements for monitoring, and the frequency of monitoring.

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 occur.	Environmental Manager / 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 or cement or construction waste spillages.	Environmental Manager	Weekly during active construction.
Handling of waste/ chemicals/ diesel	Soil quality degradation	Inspect chemical / waste /diesel storage areas for signs of spillages	Environmental Manager	Bi-weekly during operation.
Accidental waste / chemical /	Soil quality degradation	After spill is contained and cleared according to spill plan, undertake soil quality	Appoint Soil specialist to assess	As required

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
diesel spillages		screening assessment to establish contamination status. Assessment only required in event of spillage on open / exposed soil areas.	contamination status and risk	

9.5.6 GROUNDWATER

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 per Section 5.2 of the Groundwater Report (WSP, 2025a); and
 - Monitoring is also required from the proposed far field monitoring boreholes – as per Section 5.2 of the Groundwater Report (WSP, 2025a).
- 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.

9.5.7 TERRESTRIAL BIODIVERSITY

Key recommendations are to:

- Avoid undisturbed areas, to the extent possible. Vegetation clearing should be restricted to the proposed project footprints only, with no clearing permitted outside of these areas.
- 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.
- 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.
- 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.

- Existing stands of alien and invasive species should be removed from the project area prior to commencement of construction.

9.5.8 SOCIAL

Key recommendations are as follows:

- Where reasonable and practical, the project should apply a 'locals first' policy for jobs and procuring supplies and services.
- Wherever possible, the hiring process should promote gender equality and women's employment.
- Use existing community awareness / engagement fora with surrounding communities to provide information on the employment opportunities associated with the project, including the procurement process for the project.
- The existing environmental complaints procedure (EMS 7.4.1) should be used to address any complaints received from I&APs.

9.5.9 HERITAGE

As there is always a possibility of sites, features and material being missed as a result of various factors, it is recommended that a Chance Finds Protocol be drafted and implemented for the proposed McCain Delmas WWTP development. The Chance Finds Protocol should be included in the construction EMPr. Should any previously unknown or invisible sites, features or material be uncovered during any development actions, then an expert should be contacted to investigate and provide recommendations on the way forward.

9.5.10 PALAEOLOGY

There is a chance that fossils may occur below the ground surface in the dolomites and cherts of the Malmani Subgroup. A Fossil Chance Find Protocol should therefore be added to the construction EMPr. If fossils are found once excavations for foundations and infrastructure have commenced, then they should be rescued, and a palaeontologist called to assess and collect a representative sample.

10 CONCLUSION AND AUTHORISATION OPINION

The overall objective of the BA is to provide sufficient information to enable informed decision-making by the competent authorities. This was undertaken through consideration of the proposed project components, identification of the aspects and sources of potential impacts and subsequent provision of mitigation measures.

It is the opinion of the EAP that the information contained in this document (read in conjunction the EMPr) is sufficient for the CA to make an informed decision on the EA being applied for in respect of this proposed project.

Mitigation measures have been developed, where applicable, for the above aspects and are presented within the EMPr. It is imperative that all impact mitigation recommendations contained in the EMPr, of which the environmental impact assessment took cognisance, are legally enforced.

Considering the findings of the respective studies, no fatal flaws were identified for the proposed project. Should the avoidance and mitigation measures prescribed be implemented, the significance of the considered impacts for all negative aspects pertaining to the environmental aspects is expected

to be Low to Very Low. It is thus the opinion of the EAP that the project can proceed and that all the prescribed mitigation measures and recommendations are considered by the issuing authority.

10.1 EA AUTHORISATION PERIOD

Appendix 1(3)(1)(q) of the NEMA EIA Regulations 2014, as amended requires “*where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required, the date on which the activity will be concluded, and the post construction monitoring requirements finalised*” must be included in the BA Report.

The EA is required to be valid for a period of ten (10) years from the date of issuance of the EA. This is considered a reasonable period to allow the Applicant time to conduct relevant internal processes which can only begin after issuance of the EA.

11 WAY FORWARD

Once the additional public comment period closes, the BAR has will be finalised, taking into consideration any comments received during the public review period. The Final BAR will be submitted to the CA for consideration and decision-making. In terms of the EIA Regulations, the CA is afforded 107 calendar days to review the application and issue a decision. Registered I&APs will be notified once a decision has been issued by the CA.

If you have any further enquiries, please feel free to contact:

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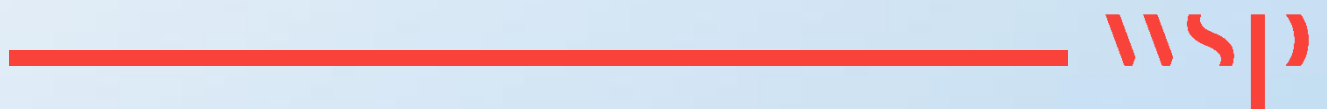
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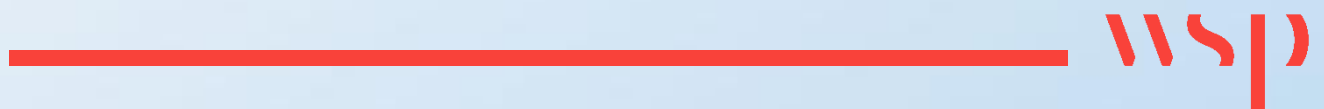
Appendix A

EAP CV AND DECLARATION



Appendix B

PRELIMINARY WWTP DESIGN REPORT



Appendix C

SITE SENSITIVITY VERIFICATION REPORT



Appendix D

SPECIALIST STUDIES



Appendix D.1

STORMWATER MANAGEMENT PLAN



Appendix D.2

GROUNDWATER IMPACT ASSESSMENT



Appendix D.3

AIR QUALITY IMPACT ASSESSMENT



Appendix D.4

ACOUSTIC IMPACT ASSESSMENT



Appendix D.5

TERRESTRIAL BIODIVERSITY IMPACT ASSESSMENT



Appendix D.6

HERITAGE IMPACT ASSESSMENT



Appendix D.7

PALAEONTOLOGICAL IMPACT ASSESSMENT



Appendix D.8

SOCIAL IMPACT ASSESSMENT



Appendix D.9

SOIL, LAND CAPABILITIES AND AGRICULTURAL POTENTIAL ASSESSMENT



Appendix D.10

GEOTECHNICAL REPORT



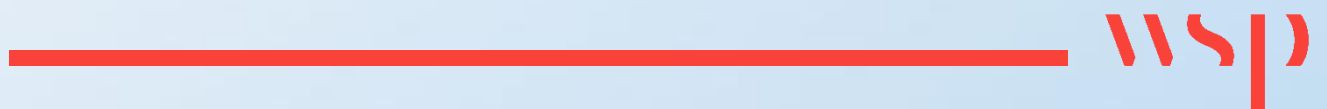
Appendix E

ENVIRONMENTAL MANAGEMENT PROGRAMME



Appendix F

STAKEHOLDER ENGAGEMENT REPORT





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