DRAFT BASIC ASSESSMENT REPORT:

THE DEVELOPMENT OF A RETAIL CENTRE ON ERVEN 20, 21 AND 22 OF PRESIDENT PARK X6, EMALAHLENI (WITBANK)

Report prepared for: Meronox (Pty) Ltd

Report dated: April 2021 (draft)

Report number: BA 2020/03

DARDLEA ref: 1/3/1/16 1N-235

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PROJECT INFORMATION SUMMARY

PROJECT TITLE	Basic Assessment Report: The Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank)

CLIENT	Meronox (Pty) Ltd
CONTACT DETAILS	Postnet Suite 290, Private Bag x7260, Witbank 1035

CONSULTANT	AdiEnvironmental cc
CONTACT DETAILS	P.O. Box 647 Witbank 1035

DARDLEA REFERENCE NO.	1/3/1/16 1N-235
AdiEnv REFERENCE NO.	BA 2020/03

REPORT VERSION	Basic Assessment Report – Draft
DATE	April 2021
REPORT VERSION	
DATE	

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AdiEnvironmental cc. 2021. Basic Assessment Report: The development of a retail centre on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank). Report prepared by: AdiEnvironmental cc. Report compiled for: Meronox (Pty) Ltd. Report dated: April 2021.

UNDERTAKING BY EAP

as required in terms of Section 2(j) of Appendix 2 of the Environmental Impact Assessment Regulations, 2014 (as amended).

Project: Basic Assessment Report: The development of a retail centre on Erven 20, 21 and 22 of President Park X6, eMalahleni (DARDLEA Ref. no.: 1/3/1/16 1N-235; AdiE Ref no.: BA 2020/03).

I, ADRIENNE ERASMUS, *hereby confirm that:*

- *the information provided in this Draft Basic Assessment Report is, to the best of my knowledge, correct as at the time of compilation thereof;*
- *comments and inputs obtained from stakeholders and interested and affected parties through the public participation process conducted to date have been included in this Draft Basic Assessment Report;*
- *information provided to interested and affected parties (to date) has been included in this Draft Basic Assessment Report;*
- *inputs and recommendations from the specialist reports are included in this Draft Basic Assessment Report.*

Signed at eMALAHLENI on this 30TH day of APRIL of 2021.

Signature:.....

Company: ADI ENVIRONMENTAL CC

I, P.A Janse van Rensburg, *hereby confirm that:*

- *the information provided in this Draft Basic Assessment Report is, to the best of my knowledge, correct as at the time of compilation thereof;*
- *comments and inputs obtained from stakeholders and interested and affected parties through the public participation process conducted to date have been included in this Draft Basic Assessment Report;*
- *information provided to interested and affected parties (to date) has been included in this Draft Basic Assessment Report;*
- *inputs and recommendations from the specialist reports are included in this Draft Basic Assessment Report.*

Signed at eMalahleni on this 30th day of April of 2021.

Signature:.....

Company: AdiEnvironmental CC

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LIST OF ABBREVIATIONS

°C	Degrees Celsius
BA	Basic Assessment
BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
COGTA	Department of Co-operative Governance and Traditional Affairs
DAFF	Department of Agriculture, Forestry and Fisheries
DARDLEA	Department of Agriculture, Rural Development, Land and Environmental Affairs
DMR	Department of Mineral Resources
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
ESA	Ecological Support Area
ha	hectares
HIA	Heritage Impact Assessment
I&AP	Interested and Affected Party
km	kilometer
kl	kiloliter
ℓ	liter
l/s	liters per second
m	meters
mamsl	meters above mean sea level
mbgl	meters below ground level
mm	millimeter
MBSP	Mpumalanga Biodiversity Sector Plan
MTPA	Mpumalanga Tourism and Parks Agency
NFEPA	National Freshwater Ecosystem Priority Areas
PIA	Palaeontological Impact Assessment
PES	Present Ecological State
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SANRAL	South African National Roads Agency Limited
SDF	Spatial Development Framework
STLM	Steve Tshwete Local Municipality
TRAC	Trans African Concession

SECTION 1: INTRODUCTION

The applicant, ***Meronox (Pty) Ltd.***, intends to develop a retail centre on Erven 20, 21 and 22 of President Park X6, eMalahleni. The proposed site is located on the corner of Nita Avenue and Mandela Drive, adjacent to the Portuguese Club and opposite the Nissan dealership, eMalahleni (Figure 3.1).

The entire site is ±3 ha in extent, with the specific stand sizes as follows: Erf 20 (0.99ha), Erf 21 (0.98ha) and Erf 22 (1.08ha). The erven are zoned 'Business 2', which permits a number of land uses (e.g. shops, liquor outlets, laundromat, car wash, motor dealership, offices, etc.) in terms of the Emalahleni Land Use Scheme, 2020. The specific land uses to be established on site must still be finalized.

The Minister of Environmental and Water Affairs listed in terms of Sections 24(2), 24(5), 24D and 44, read with section 47A(1)(b) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), a number of activities that require an environmental impact assessment (either a Basic Assessment or a full Environmental Impact Assessment) before undertaking these activities.

The ultimate aim of an environmental impact assessment is to *"identify, predict and evaluate the actual and potential risks for and impacts on the geographical, physical, biological, social, economic and cultural aspects of the environment, in order to find the alternative and options that best avoid negative impacts altogether, or where negative impacts cannot be avoided, to minimise and manage negative impacts to acceptable levels, while optimising positive impacts, to ensure that ecological sustainable development and justifiable social and economic development outcomes are achieved."*(DEA, 2017).

The proposed activity would require a Basic Assessment process since the following listed activity (as identified in the Environmental Impact Assessment Regulations, 2014 (as amended)) is triggered:

Listing	Activity
Listing Notice 1: Listed Activity 27	*The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.*

AdiEnvironmental cc. was appointed as independent environmental consultant to conduct the required Basic Assessment and compile the necessary documentation.

The objective of the Basic Assessment process is to, through a consultative process:

a) Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
b) Identify the alternatives considered, including the activity, location, and technology alternatives;

c) Describe the need and desirability of the proposed alternatives;
d) Through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage and cultural sensitivity of the sites and locations and the risk of impact of the proposed activity and technology alternatives on these aspects to determine: (i) the nature, significance, consequence, extent, duration and probability of the impacts occurring; and (ii) degree to which these impacts (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated.
e) Through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to: (i) identify and motivate a preferred site, activity and technology alternative; (ii) identify suitable measures to avoid, manage or mitigate identified impacts; and (iii) identify residual risks that need to be managed and monitored.

The overall aim of the process is to provide the competent authority with adequate information to make an informed decision regarding the proposed activity, thereby ensuring that activities with an unacceptable degree of negative impacts are not authorized and that authorized activities are undertaken in a manner where environmental impacts are managed to acceptable levels.

The decision making authority is the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA). This Department will decide to grant or refuse the approval of the project. On approval, an Environmental Authorisation and Record of Decision will be issued in the name of the project applicant.

Diagram 1 provides a schematic description of the Basic Assessment process followed and the current status of the process.

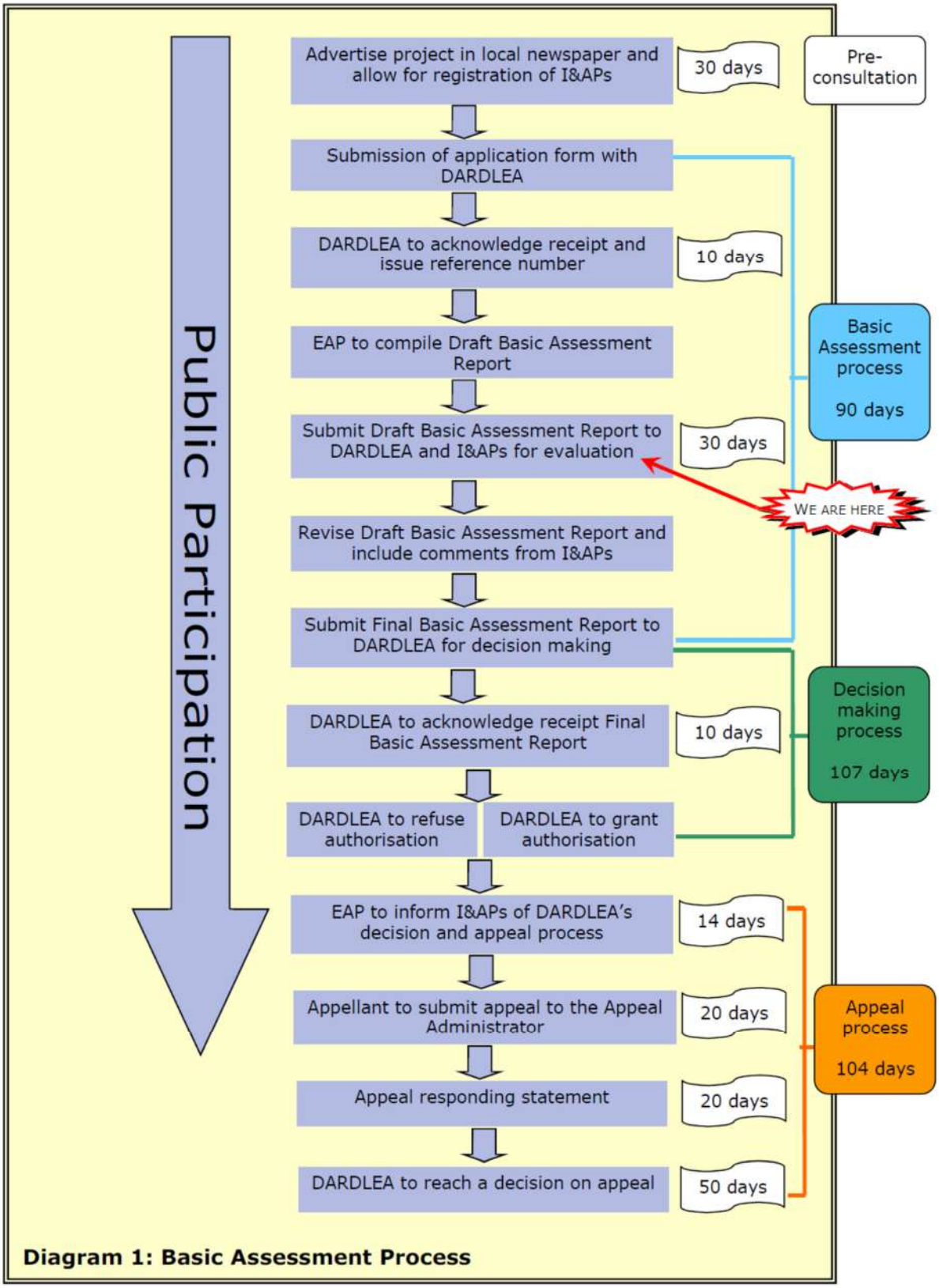


Diagram 1: Basic Assessment Process

SECTION 2: CONTACT DETAILS

As per Appendix 1 of the EIA Regulations, 2014 (as amended), this section provides the following details:

> *(i) the EAP who prepared the report; and*
> *(ii) the expertise of the EAP, including a curriculum vitae.*

In addition, the contact details of the applicant and the specialists who conducted the required specialist studies are also provided.

2.1 Details of the project applicant

Name of Applicant	Meronox (Pty) Ltd.
Company Registration No	2009/015785/07
Address	Postnet Suite 290, Private Bag x7260, Witbank, 1035
Contact Person	Mr. M.G. de Abreu
Cell number	082 876 4752
Fax number	086 610 5671
E-mail	mdeabreu@mweb.co.za

2.2 Details of the registered landowner

Erven 20, 21 and 22 of President Park X6 are registered at the Deeds Office to Meronox (Pty) Ltd (i.e. the applicant) – see the Windeed Property Report provided in Appendix 1.

2.3 Details of the Environmental Assessment Practitioner (EAP)

Meronox (Pty) Ltd. appointed AdiEnvironmental cc, an independent environmental consultancy, to undertake the Basic Assessment process for the proposed development in accordance with the Environmental Impact Assessment Regulations (EIA), 2014 (as amended).

Name of company	AdiEnvironmental cc
Company registration number	CK99/036174/23
Address	P.O. Box 647 Witbank, 1035
Environmental Assessment Practitioner 1 (EAP1)	Adrienne (Adie) Erasmus *M.Sc* *Pr. Sci. Nat. (400078/96)* *EAP Registration No:2019/604*
Environmental Assessment Practitioner 2 (EAP2)	Riana Janse van Rensburg *M. Env. Mgt.* *EAP Registration No:2019/1341*
Telephone number	013-697 5021
Cell number	083 271 8260
E-mail	adie@adienvironmental.co.za riana@adienvironmental.co.za

Ms. A. Erasmus has a M.Sc with more than 25 years environmental management experience. She is a Professional Natural Scientist (Botanical and Ecological Science) registered with South African Council for Natural Scientific Professions. Ms. R. Janse van Rensburg has an M. Env. Mgt with more than 18 years environmental management experience. Both Ms. Erasmus and Ms. van Rensburg are Registered Environmental Assessment Practitioners (EAPs) with the Environmental Assessment Practitioners Association of South Africa (EAPASA) – see the website www.eapasa.org for further details.

Ms. Erasmus and Ms. Janse van Rensburg have been involved in the management and execution of numerous environmental assessments. The Curriculum Vitae of the Environmental Assessment Practitioners (EAPs) are provided in Appendix 2 together with a list of projects completed to date.

Both EAPs comply with the requirements as stipulated in Regulation 13 of the EIA Regulations, 2014 (as amended) in terms of independence, expertise, objectivity, etc. The declaration and affirmation by the EAPs is included in the front of this document.

AdiEnvironmental cc has no vested interest (other than fair remuneration) in the approval of this project, and hereby declares its independence as required by the EIA Regulations, 2014 (as amended).

2.4 Details of the specialists

Specialist studies were undertaken as part of the Basic Assessment process to address issues that required further investigation. The following specialists were appointed by the EAP:

Specialist Study	Consultant	Qualifications
Heritage Assessment	Prof Anton van Vollenhoven (Archaetnos Culture and Cultural Resource Consultants)	• BA • BA (HONS) Archaeology • MA Archaeology • Post-Graduate Diploma in Museology • Diploma Tertiary Education • DPhil Archaeology • MA Cultural History • Management Diploma • DPhil History *ASAPA Accreditation: 166* *SASCH Accreditation: CH001*
Palaeontological Assessment	Dr Heidi Fourie (Heidi Fourie Consulting)	• B.Sc Geology and Zoology • Ph.D Palaeontology *Member: Palaeontological Society of SA.*
Vegetation and Wetland Study	Ina Venter (Kyllinga Consulting)	• M.Sc (Botany) • B.Sc Hons (Botany) • B.Sc (Environmental Sciences) *SACNASP Registration: 400048/08*
Bullfrog Study	J.C.P. (Jaco) van Wyk	• M.Sc (Zoology) – indepth study of the Giant Bullfrog • B.Sc Hons (Zoology) • B.Sc (Zoology) *SACNASP Registration: 400062/09*

The Curriculum Vitae and declarations of independence of the above-mentioned specialists are provided in Appendix 2.

SECTION 3: DESCRIPTION OF THE ACTIVITY

The purpose of this section is to present sufficient project information to Interested and Affected Parties, stakeholders and government departments in terms of the design parameters applicable to the project.

This section therefore provides information on the following as per Appendix 1 of the EIA Regulations, 2014 (as amended):

- *A description of the scope of the proposed activity;*
- *A description of the activities to be undertaken including associated structures and infrastructure;*
- *A plan which locates the proposed activity as well as associated structures and infrastructure (i.e. conceptual design/layout plan).*

It should be noted that the project description details are preliminary at this early stage of the project life-cycle. It is thus possible that some of the design parameters may change during the detailed design phase. However, the project description used in this Basic Assessment Report assumes a worst-case scenario, where the maximum development footprint and all associated infrastructure are taken into account.

3.1 Description of the site, design, size and scale of the development

3.1.1 Introduction

The applicant, ***Meronox (Pty) Ltd.***, intends to develop a retail centre on Erven 20, 21 and 22 of President Park X6, eMalahleni. The proposed site is located on the corner of Nita Avenue and Mandela Drive, adjacent to the Portuguese Club and opposite the Nissan dealership, eMalahleni (Figure 3.1).

Figure 3.1 indicates the location of the site and Table 3.1 provides the property details.

Table 3.1: Details of the property

Suburb	President Park X6
Erf Numbers	20, 21 and 22
Title Deed Number	T11826/2016
21 Digit SG Code	TOJS01050000002000000 (Erf 20) TOJS01050000002100000 (Erf 21) TOJS01050000002200000 (Erf 22)
Registered Landowner	Meronox (Pty) Ltd
Size of property	Erf 20 – 0.99ha (9862 m^2) Erf 21 – 0.98ha (9793 m^2) Erf 22 – 1.08ha (10 799 m^2) Total: 3.05 ha
Size (footprint) of development	3.05 ha
Centre Co-ordinates of site	25°52’59.34”S and 29°15’27.16”E
Magisterial District	eMalahleni Local Municipality
Closest Town	eMalahleni (Witbank)

Figure 3.1: Location of the site

3.1.2 Layout plan

The entire site is ±3 ha in extent, with the specific stand sizes as follows: Erf 20 (0.99ha), Erf 21 (0.98ha) and Erf 22 (1.08ha) (Figure 3.2).

The erven are zoned 'Business 2', which permits a number of land uses (e.g. shops, liquor outlets, laundromat, car wash, motor dealership, offices, etc.) in terms of the Emalahleni Land Use Scheme, 2020.

Figure 3.2 provides an indication of the layout of the three erven where a retail centre will be developed.

Further details and plans with regards to the proposed layout of the retail centre are provided in Section 7 (Alternatives) of this Basic Assessment Report.

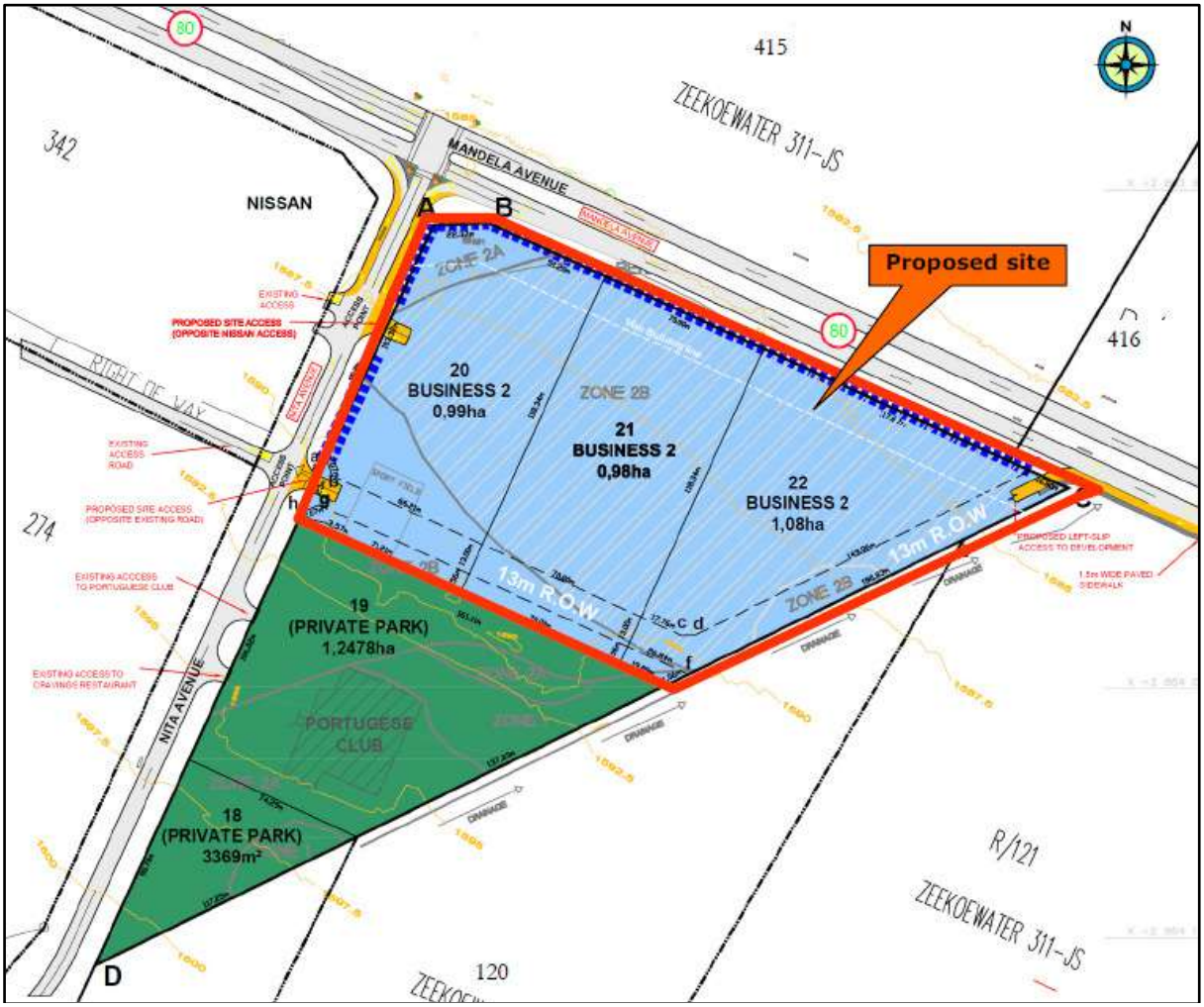


Figure 3.2: Layout of the 3 erven to be developed

3.2 Services required

The said site is located within the urban edge of the eMalahleni Local Municipality.

Services (water, sewage, electricity, etc.) will be provided by the eMalahleni Local Municipality.

The link services (roads and electricity) and the internal reticulation (water, sewer, electricity, streets and street lighting) of the development will be done by the developer to the satisfaction of the eMalahleni Local Municipality.

Further details are provided in Section 7 (Alternatives) of this Basic Assessment Report.

3.3 Reason for project

The proposed Erven (originally part of Portion 234 of Zeekoewater 311 JS) were rezoned from Agriculture to Business 2 in 2013 as part of the President Park X6 township establishment (Figure 3.2).

The original land owner subsequently sold the three (3) erven to the applicant (Meronox (Pty) Ltd.) in 2019. The applicant now wants to proceed with the development of the erven, but requires environmental approval before commencing with the development.

The proposed retail centre will be located adjacent to Mandela Drive and would be highly visible and easily accessible. Mandela Drive was identified in the Spatial Development Framework (2015) as one of the activity spines where the Municipality would allow non-residential uses to take place in order to optimally utilize the visual exposure from the high traffic volumes along this road.

SECTION 4: APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

The primary legal requirement for this project stems from the need for a Basic Assessment (BA) and Environmental Authorisation (EA) in terms of National Environmental Management Act, 1998 (NEMA) (Act 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended).

The Minister of Environmental and Water Affairs listed in terms of Sections 24(2), 24(5), 24D and 44, read with section 47A(1)(b) of NEMA, 1998 (Act 107 of 1998), a number of activities that require an environmental impact assessment (either a Basic Assessment (BA) or a full Environmental Impact Assessment (EIA)) before undertaking these activities.

The proposed activity would require a Basic Assessment process since the following listed activity (as identified in the Environmental Impact Assessment Regulations, 2014 (as amended)) is triggered:

Listing	Activity
Listing Notice 1: Listed Activity 27	*The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.*

Appendix 1 of the EIA Regulations, 2014 (as amended) prescribes the content of the Basic Assessment Report and supporting documentation that must be submitted to the competent authority in order to obtain an Environmental Authorisation (EA). Table 4.1 provides an overview of where the requirements of Appendix 1 of the EIA Regulations (2014) are addressed in this BA Report.

Table 4.1: Content of the Basic Assessment Report in accordance with Appendix 1 of the EIA Regulations, 2014 (as amended)

APPENDIX 1 OF GN 326 OF 7 APRIL 2017	SECTION IN BA REPORT
3(1) A basic assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—	
(a) details of— (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	(i) Section 2 (ii) Section 2 and Appendix 2
(b) the location of the activity, including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	(i) Section 5.1 (ii) Section 5.1 (iii) Section 5.1
(c) a plan which locates the proposed activity or activities applied for as well as associated structures and infrastructure at an appropriate scale; or, if it is— (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Figure 5.1 - Topographical map; Figure 5.3 - Aerial view
(d) a description of the scope of the proposed activity, including— (i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure;	(i) Section 1.1 (ii) Section 3; Section 7

APPENDIX 1 OF GN 326 OF 7 APRIL 2017	SECTION IN BA REPORT
(e) a description of the policy and legislative context within which the development is proposed including— (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	(i) Section 4; Table 4.2 (ii) Section 4; Table 4.2
(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; Section 7; Section 10
(g) a motivation for the preferred site, activity and technology alternative;	Section 7
h) a full description of the process followed to reach the proposed preferred alternative within the site, including— (i) details of all the alternatives considered;	(i) Section 7
(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	(ii) Section 6; Section 11 and Appendices 8-11
(iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	(iii) Section 6; Table 6.4
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	(iv) Section 5
(v) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts— (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	(v) Section 8
(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	(vi) Section 8
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	(vii) Section 8
(viii) the possible mitigation measures that could be applied and level of residual risk;	(viii) Section 9 (EMPr)
(ix) the outcome of the site selection matrix;	(ix) Section 7
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and	(x) N/A
(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	(xi) Section 7.6
(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, including— (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Section 8
(j) an assessment of each identified potentially significant impact and risk, including— (i) cumulative impacts; (ii) the nature, significance and consequences of the impact and risk; (iii) the extent and duration of the impact and risk; (iv) the probability of the impact and risk occurring; (v) the degree to which the impact and risk can be reversed; (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and (vii) the degree to which the impact and risk can be avoided, managed or mitigated;	Section 8
(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 5; Section 9 (EMPr); Section 10
(l) an environmental impact statement which contains— (i) a summary of the key findings of the environmental impact assessment;	(i) Section 10

APPENDIX 1 OF GN 326 OF 7 APRIL 2017	SECTION IN BA REPORT
(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	(ii) Section 9 (EMPr) and Figure 9.1 (iii) Section 7; Section 10
(m) based on the assessment, and where applicable, impact management measures from specialist reports, the recording of the proposed impact management outcomes for the development for inclusion in the EMPr;	Section 9 (EMPr)
(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 10
(o) a description of any assumptions, uncertainties, and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Section 10
(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
(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 concluded, and the post construction monitoring requirements finalised;	N/A
(r) an undertaking under oath or affirmation by the EAP in relation to— (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties; and	Front of Document
(s) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
(t) any specific information that may be required by the competent authority; and	N/A
(u) any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

Table 4.2 provides a summary of the key policy and legislative requirements applicable to the proposed project, including how it was considered in the preparation of the report.

Table 4.2: Applicable legislation, policies and/or guidelines

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
Environmental Management			
The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)	To establish a Constitution with a Bill of Rights for the RSA. It sets out of a number of fundamental environmental rights (Section 24).	Throughout the Basic Assessment process.	The development will not be harmful to the health or wellbeing of surrounding landowners/users. Mitigation measures will be implemented to ensure that the environment is not polluted or degraded.
National Environmental Management Act, 1998 (Act 107 0f 1998) and amendments	To provide for the integrated management of the environment. Chapter 1 sets out the national environmental principles. Chapter 5 deals specifically with integrated management. Chapter 7 deals with compliance and enforcement with specific reference to Section 28 (duty of care)	Throughout the Basic Assessment process.	Environmental management principles and general objectives of Integrated Environmental Management taken into account throughout the Basic Assessment process.
Environmental Impact Assessment Regulations, 2014 and amendments	Regulations pertaining to environmental impact assessments.	Throughout the Basic Assessment process. Listed Activity 27 of GN 983 (as amended).	Basic Assessment process undertaken for the proposed development in accordance with the requirements of the Regulations.
National Appeal Regulations, 2014 and amendments	To regulate the procedure contemplated in Section 43(4) of the Act relating to the submission, processing and consideration of a decision on an appeal.	N/A	On receipt of the Environmental Authorisation, I&APs will be informed that an Appeal against the decision can be lodged and the procedure as prescribed in the National Appeal Regulations, 2014 must be followed.
Public Participation Guideline in terms of EIA Regulations, 2017	Guideline on the public participation process	Section 6 - Public participation	Adjacent landowner/users, relevant stakeholders and Interested and Affected Parties were consulted to obtain input with regards to the proposed development and to resolve any queries or concerns with regards to the activity.
Directions Regarding Measures to Address, Prevent and Combat the Spread of COVID-19 Relating to National Environmental Management Permits and Licences (Covid-19 Directions of 5 June 2020)	COVID directions regarding environmental management	Section 6 – Public participation	The Public Participation Process was designed to satisfy the requirements of Chapter 6 and Appendix 1 of the EIA Regulations, 2014 (as amended), the PP Guideline, 2017 as well as the Covid-19 Directions of 5 June 2020.

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
Guideline on Need and Desirability in terms of EIA Regulations, 2017	Guideline with regards to need and desirability of activities	Throughout the document Section 10 - Impact statement	The need and desirability of the proposed development was considered during the Basic Assessment process.
Biodiversity			
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) and amendments	To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; 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; the establishment and functions of a South African Biodiversity Institute; and for matters connected therewith.	Section 5.7 - Vegetation Section 5.8 - Animal life	No sensitive environments are present on site. General mitigation measures in terms of the protection of the natural environment are however, indicated in the EMPr (Section 9).
National Biodiversity Framework (NBF, 2008)	To co-ordinate and align the efforts of the organisations and individuals involved in conserving and managing South Africa's biodiversity	Section 5.7 - Vegetation Section 5.8 - Animal life	No sensitive environments are present on site. General mitigation measures in terms of the protection of the natural environment are however, indicated in the EMPr (Section 9).
National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004): National List of Ecosystems that are threatened and in need of protection (9 December 2011).	The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction. This includes preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to preserve witness sites of exceptionally high conservation value.	Section 5.7 - Vegetation	The proposed development is not located within any threatened ecosystems listed in the NEM: Biodiversity Act.
Threatened or Protected Species Regulations (GN 152 of 23 February 2007)	To further regulate the permit system in terms of restricted activities involving threatened or protected species.	Section 5.7 – Vegetation Section 5.8 - Animal life	To be noted if bullfrogs are found on site and need to be relocated.
List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998)	Provides a list of protected tree species.	Section 5.7 - Vegetation	No protected tree species are present on site.
National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) and amendments	To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for	Section 5.7 – Vegetation Section 5.8 - Animal life	The site is not located within or near a protected area. The Witbank Nature Reserve is located approximately 3.5km east of the site. The proposed development will however, not have any direct or indirect impacts on the nature reserve.

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
	intergovernmental co-operation and public consultation in matters concerning protected areas; and for matters in connection therewith.		
National Protected Areas Expansion Strategy (NPAES, 2008)	To achieve cost-effective expansion of the protected area network that enhances ecological sustainability and resilience to climate change.	Section 5.7 – Vegetation Section 5.8 – Animal life	The site is not located within or near a proposed expansion area.
Mpumalanga Nature Conservation Act, 1998 (Act 10 of 1998) and amendments	To control nature conservation in Mpumalanga.	Section 5.7 - Vegetation Section 5.8 - Animal life	No conservation areas, CBA's or ESA's are indicated in the Mpumalanga Biodiversity Sector Plan (MBSP, 2013) for the site. The Witbank Nature Reserve is however, located approximately 3.5km east of the site. The closest CBA is located approximately 400m east of the site opposite the Highveld Mall (Figure 5.11).
Conservation of the Agricultural Resources Act, 1983 (Act 43 of 1989) and amendments	To provide control over the utilization of the natural resources of the Republic in order to promote the conservation of soil, the water sources and the vegetation; and for matters connected therewith.	Section 5 - Biophysical description Section 9 - EMPr	Mitigation measures (e.g. erosion control) to be implemented during construction and operation to ensure compliance with the CARA Act. Mitigation measures included in the EMPr, Section 9.
Alien and Invasive Species Regulations, 2020; Alien and Invasive Species Lists, 2020.	Regulations regarding alien and invasive species.	Section 5.7 - Vegetation Section 5.8 - Animal life Section 9 – EMPr	Mitigation measures to be implemented during construction and operation to ensure that alien and invasive species are controlled. Mitigation measures included in the EMPr, Section 9.
Water			
National Water Act, 1998 (Act 36 of 1998) and amendments	To control water management aspects.	Section 5.9 - Surface water and wetlands Section 9.5 – Mitigation and management measures	No rivers, streams or dams are located on site or in close proximity of the site. The closest stream is an unnamed tributary (locally known as Madelspruit), which is located approximately 800 m west of the site (Figure 5.1). The Olifants River is located 3.8 km east of the site (Figure 5.12). A Seep Wetland is located to the east of the site, which becomes a Valley Bottom Wetland/drainage area downstream. Mitigation measures (in terms of water management) to be implemented during construction and operation to ensure compliance with the National Water Act. Mitigation measures included in the EMPr, Section 9.
Water Use Licence Applications & Appeal Regulations, 2017	To prescribe the procedure and requirements for water use licence applications as	N/A	The site is located within 500m of a water course (wetland). A Water Use License is

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
	contemplated in sections 41 of the Act; as well as an appeal in terms of section 41(6) of the Act.		however, not required since the proposed development will have a low risk as per the Risk Assessment conducted by Venter (2020). A General Authorisation could be applicable.
Water Services Act, 1997 (Act 108 of 1997)	To provide for the rights of access to basic water supply and basic sanitation.	Sections 3 and 7 – Service provision.	Water and sewer services will be connected to the existing municipal infrastructure.
National Freshwater Ecosystem Priority Assessment (NFEPA) of 2012 and implementation manual.	Provides strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources.	Section 5.9 - Surface water and wetlands	According to the NFEPA database (Figure 5.19), the site is located within an area identified as an Ecological Support Area (ESA): Wetland Clusters. Wetlands are indicated to be present east of the site. Mitigation measures (in terms of water management) to be implemented during construction and operation to ensure that the
Best Practice Guidelines published by the Department of Water Affairs and Forestry: G1 - Storm Water Management	Provides best practice principles and guidelines in terms of water management.	Section 7.4.5 - Storm water management	A storm water management plan was drafted for the proposed development by J.M. van Rooyen of EDL Engineers (Pty) Ltd. A copy of the report is provided in Appendix 12.
Waste			
National Environmental Management: Waste Act, 2008 (Act 59 of 2008) and amendments	To reform the law regulating waste management in order to protect health and the environment by providing for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.	Section 7.4.4 – Waste management Section 9 – Mitigation and management measures	During the operational phase, waste will be removed by the eMalahleni Local Municipality and disposed at the licenced Leeuwpoort Waste Disposal Site. A waste management license is not required for this project. Mitigation measures in terms of waste management are included in the EMPr, Section 9.
Nkangala District Municipality Integrated Waste Management Strategy	A strategy dealing with waste.	Section 7.4.4 – Waste management Section 9.5 – Mitigation and management measures	
eMalahleni Local Municipality Waste Management By-Laws	To regulate the management of waste within the eMalahleni Local Municipal area.	Section 7.4.4 – Waste management	
Development Planning			
Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)	To provide a framework for spatial planning and land use management	Section 3 - Description of activity Section 5.17 - Sense of place Figure 5.21 – SDF	The said property has already been rezoned for business purposes. According to the eMalahleni Local Spatial Development Framework (LSDF), Mandela Drive was identified as one of the activity spines/corridors (Figure 5.19) where non-residential uses would be allowed in order to optimally utilize the visual exposure from the high traffic volumes along this road. The proposed retail development would be highly visible and easily accessible from Mandela Drive and therefore fits into the
Integrated Development Plan for the eMalahleni Local Municipality	Broad spatial framework guidelines for the eMalahleni Local Municipality.		
Spatial Development Framework for the eMalahleni Local Municipality	Spatially based policy guidelines whereby changes, needs and growth in the region can be managed to benefit the whole community.		

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
			development plans of the eMalahleni Local Municipality. The proposed development should therefore not impact on the sense of place of the area.
Sub-division of Agricultural Land, 1970 (Act 70 of 1970)	To control the subdivision and, in connection therewith, the use of agricultural land.	Section 5.3 – Land Use	The site is already zoned for business purposes.
National Framework for Sustainable Development (NFSD, 2008)	To enunciate South Africa's national vision for sustainable development and indicate strategic interventions to re-orientate South Africa's development path in a more sustainable direction. It proposes a national vision, principles and areas for strategic intervention that will enable and guide the development of the national strategy and action plan.	Throughout the Basic Assessment process.	Sustainable development principles taken into account throughout the Basic Assessment process.
Sustainable Development Goals, 2015	A universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030.	Throughout the Basic Assessment process.	Sustainable Development Goals taken into account in the Basic Assessment process in terms of minimizing damage to the environment (EMPr).
National Development Plan 2030 (NDP, 2012)	The NDP aims to eliminate poverty and reduce inequality by 2030. These goals can be realized by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.	Section 3.3 - Reason for project Section 7 – Alternatives Section 10 - Impact statement	The proposed development will create employment opportunities during the construction and operational phases and provide much needed space for new businesses/industries.
Heritage Resources			
National Heritage Resources Act, 1999 (Act 25 of 1999) and amendments	This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations.	Section 5.13 - Sites of archaeological/cultural interest Section 9 - EMPr	A Heritage Impact Assessment was conducted. No sites of archaeological interest were identified on site by the appointed archaeologist. A Palaeontological Impact Assessment was conducted and mitigation measures provided in Section 9.
Air Quality			
National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) and amendments	To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality	Section 5.11 - Air quality Section 9 - EMPr	The development will not produce emissions as it is a commercial development, which would be provided with electricity. No noxious industries will be allowed on site. An emissions license is not required.

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
	monitoring, management and control by all spheres of government; for specific air quality measures.		
Highveld Priority Area Air Quality Management Plan, 2011	To achieve and maintain compliance with the ambient air quality standards across the HPA, using the Constitutional principle of progressive realisation of air quality improvements. The AQMP for the HPA provides the framework for implementing departments and industry to include AQM in business planning to ensure effective implementation and monitoring.	Section 5.11 - Air quality	The development is located within the Highveld Priority Area. The development will however, not produce emissions as it is a commercial development, which would be provided with electricity.
National Dust Control Regulations, 2013	To prescribe general measures for the control of dust in all areas.	Section 5.11 – Air quality Section 9 – EMPr	Dust could be generated as a result of construction activities and use of heavy machinery. Mitigation/management measures with regards to dust are indicated in the EMPr, Section 9. No dust will generated during the operational phase since the access roads would be tarred/paved.
Noise			
Noise Control Regulations (GN 154 of 1992)	To set out rules relative to the control of noise.	Section 5.12 - Noise Section 9 - EMPr	The ambient noise level of the site is relatively high since the site is located adjacent to Mandela Drive and Nita Avenue, which both carry fairly high volumes of traffic throughout the day. Section 8.5.10 provides an indication of the potential noise impact during the construction and operational phases. Mitigation/management measures with regards to noise are indicated in the EMPr (Section 9).
eMalahleni Local Municipality by-law with regards to noise and control.	To regulate noise within the eMalahleni Local Municipal area.	Section 5.12 - Noise Section 9 – EMPr	
Health and Safety			
Health Act, 1977 (Act 63 of 1977) and amendments	To promote public health.	Section 9 - EMPr	Mitigation measures to reduce potential impacts on the site workers provided in the EMPr, Section 9.
Occupational Health and Safety Act, 1993 (Act 85 of 1993) and amendments	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the activities of persons at work.	Section 9 - EMPr	Mitigation measures to reduce potential impacts on the contractors and employees/site workers provided in the EMPr, Section 9.
National Building Regulations and Standards Act, 1977 (Act 103 of 1977) and amendments	To provide for the promotion of uniformity in the law relating to the erection of buildings in the areas of jurisdiction of local authorities; for the prescribing of building standards; and for matters connected therewith.	Section 3 - Project description Section 7 - Alternatives	The buildings will be constructed according to the National Building Regulations.

Legislation/policies/guidelines	Aim of legislation, policy or guideline	Where considered in BA Report	Adherence of proposed activity
National Veld and Forest Fire Act, 1998 (Act 101 of 1998) and amendments	To prevent and combat veld, forest and mountain fires throughout South Africa.	N/A	The applicant must ensure that he complies with the Act.
General			
Protection of Personal Information Act, 2013 (Act 4 of 2013)	The purpose of this act is to give effect to the constitutional right to privacy by safeguarding personal information and to regulate the manner in which personal information may be processed.	Throughout Basic Assessment process.	Throughout Basic Assessment process.
Promotion of Access to Information Act, 2000 (Act 2 of 2000) and amendments	To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights.	Throughout Basic Assessment process.	Throughout Basic Assessment process.
Promotion of Administrative Justice Act, 2000 (Act 3 of 2000) and amendments	The Act aims to make the administration (e.g. Government and Parastatals) effective and accountable to people for its actions.	Throughout Basic Assessment process.	Throughout Basic Assessment process.

SECTION 5: BIOPHYSICAL DESCRIPTION

Appendix 1 of the EIA Regulations (2014, as amended) requires a description of *"the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects".*

This section provides an overview of the environmental features of the site and surrounding area, which includes the biophysical, socio-economic and cultural/heritage aspects. The aim of this section is to provide information on the current baseline conditions of the site that will be used to identify potential impacts of the development on the environment and vice versa in Section 8 (Impact Assessment) of this report.

5.1 Location of the site

The proposed development will be located on Erven 20, 21 and 22 of President Park X6, eMalahleni. The site is located on the corner of Nita Avenue and Mandela Drive, adjacent to the Portuguese Club and opposite the Nissan dealership, eMalahleni. (Figure 5.1).

The co-ordinates for the centre of the site are:

- 25°52’59.34”S and 29°15’27.16”E

The Surveyor-General 21 digit site reference number for the proposed project is:

- TOJS01050000002000000 (Erf 20)
- TOJS01050000002100000 (Erf 21)
- TOJS01050000002200000 (Erf 22)

The said property falls under the jurisdiction of the eMalahleni Local Municipality (MP312) and the Nkangala District Municipality (DC31).

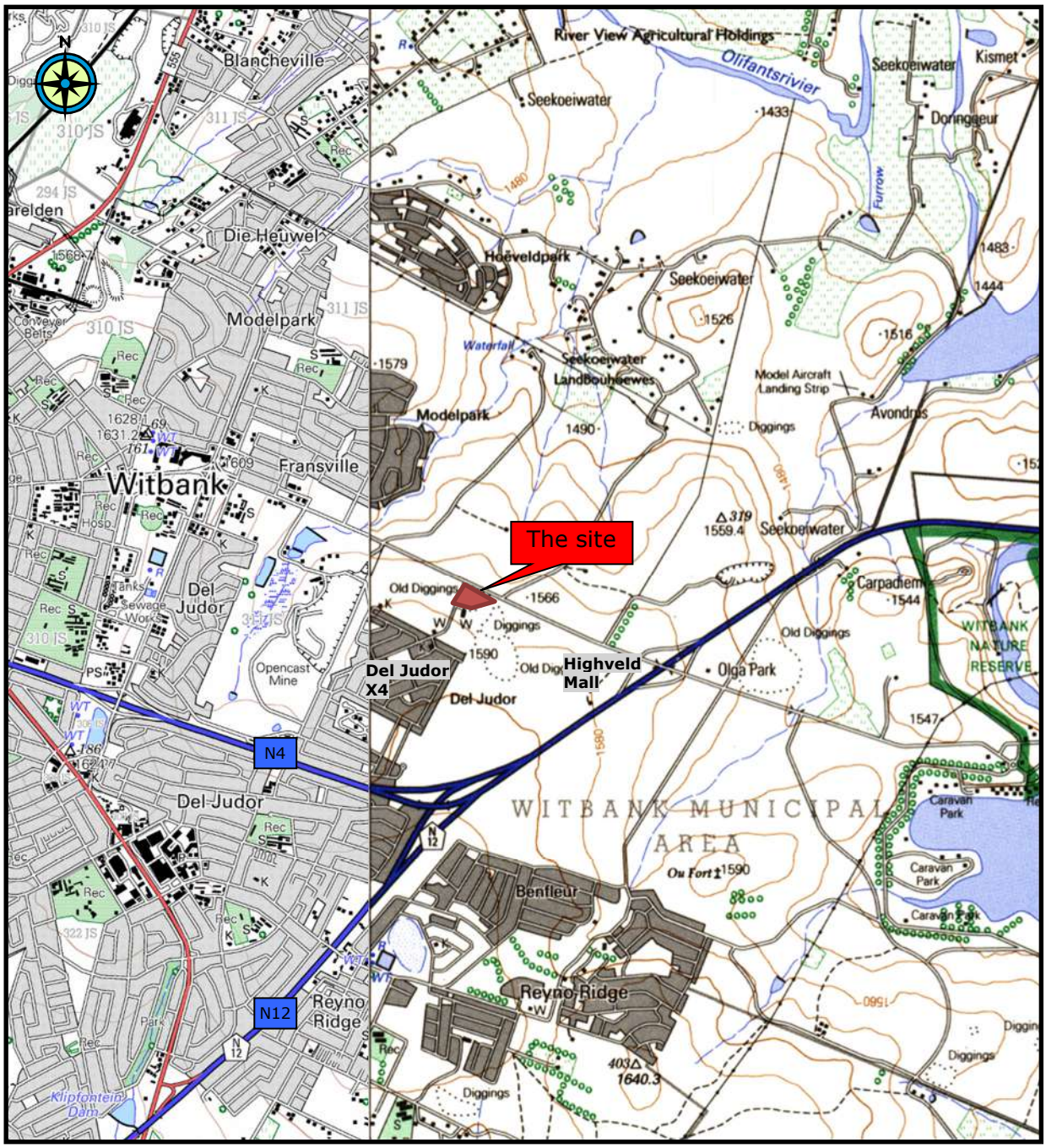


Figure 5.1: Location of site
(taken from 1: 50 000 2529CC and 2529 CD)

5.2 Climate

The South African Weather Bureau has partitioned the country into 15 climatic regions. This division is based on:

- geographic considerations, more specifically the prominent mountain ranges (great escarpment) which constitute the main climatic divides, besides also other features such as rivers and political boundaries;
- the interior plateau - use has been made of the change from BW to BS and from BS to C climates according to the Köppen classification.

The proposed site falls within Climatic Region H – The Highveld.

The climate is typical of the Highveld, with warm summers and cold winters with occasional severe frosts. Rainfall typically occurs as high-intensity short duration thunderstorms. The average frost period is 111 days per annum. The mean annual temperature is 22.5°C, with recorded extremes of -11°C and 34°C.

5.2.1 Temperature

An indication of the lowest and highest monthly mean ambient temperatures are presented in Figure 5.2a.

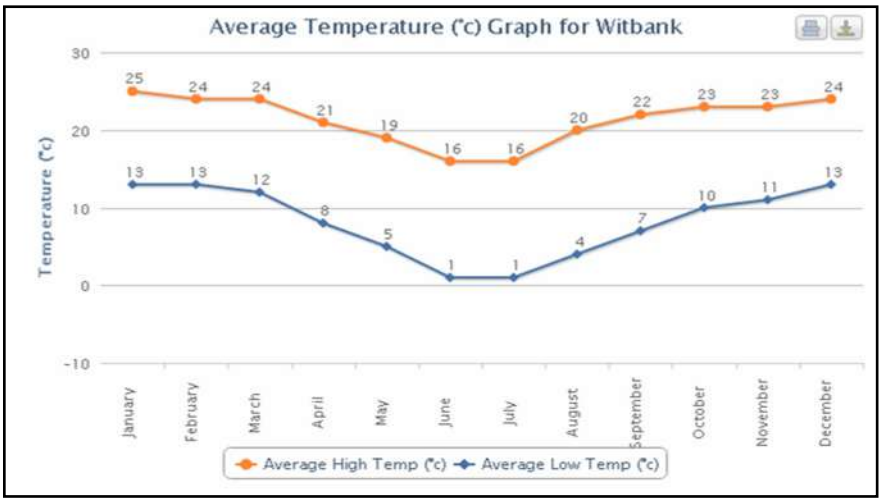


Figure 5.2a: Average temperature graph for eMalahleni (taken from www.worldweatheronline.com)

The highest temperatures are experienced during January and are usually recorded between 12:00 and 16:00. The mean temperature begins to rise slowly from a minimum between 05:00 – 06:00 to a mean maximum at 14:00. It then drops sharply after 16:00 –17:00.

5.2.2 Rainfall

The average rainfall and evaporation for eMalahleni are provided in Figure 5.2b. The highest rainfall months are November-January with the least rainfall during the winter months May-August.

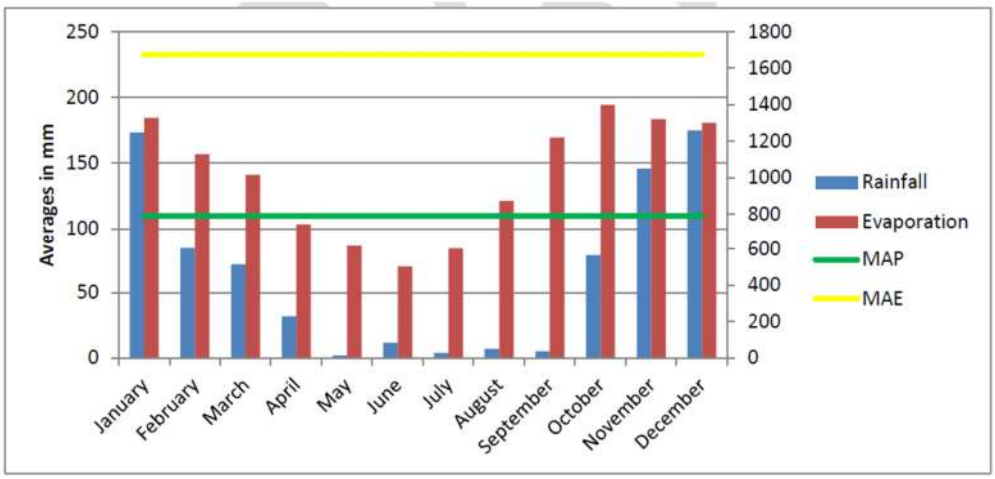


Figure 5.2b: Average rainfall and evaporation for eMalahleni (taken from Gouws, 2015)

Table 5.1 provides an indication of the Average Monthly Rainfall and Mean Monthly Evaporation measured over a period of 45 years at the Witbank Weather Station. The average annual precipitation is 702.7 mm.

Table 5.1: Average Monthly Rainfall and Mean Monthly Evaporation for eMalahleni (taken from Gouws, 2015)

Month	Average Monthly Rainfall (mm)	Mean Monthly Evaporation
January	131.5	184.5
February	91.8	156.9
March	73.8	141.4
April	39.3	103.3
May	13.4	85.9
June	7.0	70.1
July	2.9	83.9
August	7.9	121.1
September	20.7	169.5
October	78.3	194.1
November	123.8	183.5
December	116.6	180.7
Annual	702.7	1693.5

5.2.3 Wind

The wind rose for eMalahleni (Figure 5.2c) indicates that the area is characterized by easterly and northerly winds. The winds are mostly light and fall in the categories 1.80 – 3.34 m/s and 3.34 – 5.40 m/s (uMoya-NILU (Pty) Ltd., 2010).

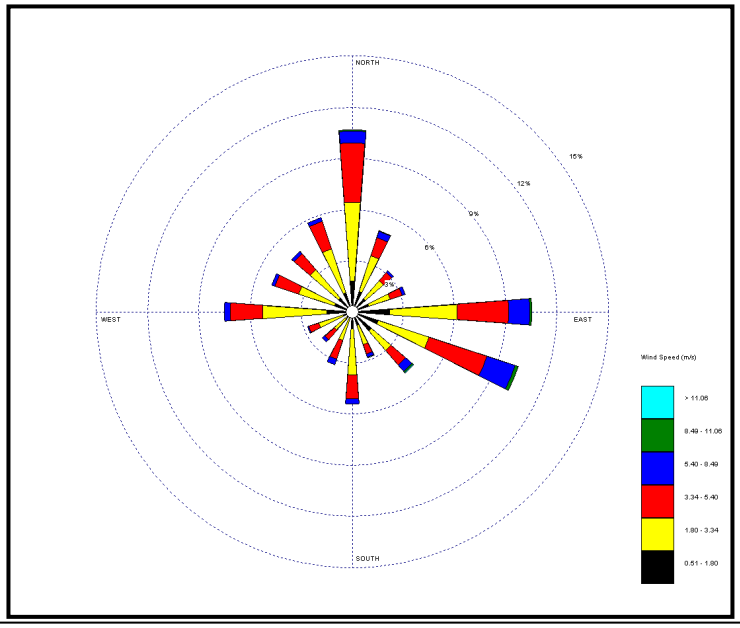


Figure 5.2c: Wind rose for eMalahleni (2004-2007)
(taken from uMoya-NILU Consulting (Pty) Ltd., 2010)

5.2.4 Climate change

According to the Mpumalanga Biodiversity Sector Plan Handbook (Lotter *et. al.*, 2014), there has already been notable shifts in climate in terms of increased average temperatures in Mpumalanga. Heat waves are becoming more frequent while cold days, nights and frost are becoming less frequent.

In addition, spring events such as flowering, bird migration and egg-laying are happening earlier in the year. Altitudinal range shifts for species such as the black mamba, red toad, black-bellied starling, yellow weaver, etc. have already been recorded.

Assuming moderate to high increases in greenhouse gas concentrations (e.g. carbon dioxide), regional modelling scenarios indicate that the north-eastern interior of South Africa will experience higher minimum, average and maximum temperatures over the next few decades (Lotter *et. al.*, 2014). Higher temperatures will be accompanied by increased incidents of drought, rainfall increases along the escarpment and a shift in rainfall pattern.

The Nkangala District Municipality drafted a Climate Change Mitigation and Response Strategy (CCMRS) in 2013. Table 5.2 provides a summary of the expected key potential climate changes for the district.

Table 5.2: Summary of key potential climatic changes for the Nkangala District Municipality (2036 - 2065 relative to 1961 - 2000) (taken from the CCMRS, 2013)

Variable	Projected change
Temperature	Average temperatures (minimum and maximum) are expected to increase by 1ºC to 3ºC.
Rainfall	Average rainfall is projected to decrease by 10 - 30%.
Extreme Events	Increases in the frequency and intensity of extreme events. This includes more severe storms and flooding, and more severe droughts. Temperature-related extremes such as increases in the number and intensity of very hot days (maximum temperatures > 35ºC) and extended very hot spells to increase.
Water resources	As temperatures and evaporation increase and rainfall decreases, already scarce water resources will become further depleted. Existing water quality problems will be exacerbated.

It is expected that the predicted climate change will mainly impact on the mining, energy, agriculture and tourism sectors (CCMRS, 2013).

5.3 Land use

5.3.1 Land ownership

Erven 20, 21 and 22 are registered at the Deeds Office to Meronox (Pty) Ltd. A copy of the Windeed Property Report is provided in Appendix B of Appendix 1.

5.3.2 Zoning of the site

All three erven are zoned 'Business 2" according to the eMalahleni Land Use Scheme 2020 (Appendix 13). According to this zoning, the following primary land uses are allowed on the said erven: *auction house, carwash, confectioner, conference centre, drive-thru restaurant, garden service establishment, government use, gymnasium, hotel, institution, laboratory, laundromat, liquor enterprise, medical suites, motor dealer, office, parking garage, place of refreshment, residential building, service enterprise, shop, social hall, step down facility, tavern, tuck shop, veterinary clinic.*

5.3.3 Size of the site

The entire site is ±3 ha in extent, with the specific stand sizes as follows: Erf 20 (0.99ha), Erf 21 (0.98ha) and Erf 22 (1.08ha).

5.3.4 Servitudes

No servitudes are known to be present on site.

The property is however, affected by the road reserves of Mandela Drive (northern boundary) and Nita Avenue (western boundary) (Figure 5.3).

5.3.5 Land use and existing infrastructure

Figure 5.3 provides an aerial view of the proposed development site.

The proposed site has not been developed but has been impacted by past activities. Material was excavated from site between 1985 and 1990 for the construction of Mandela Drive and other streets in eMalahleni (Hansmeyer, 2010). The borrow pit was subsequently backfilled with building rubble and sand (Photo 5.3).

A small sports facility (comprising of a hockey rink/basketball court, spectator stand, floodlights, etc.) is present in the south western corner of the site on Erf 20 (Photo 5.1). A small portion of this sports facility extends across the erf boundary onto the Portuguese Club property (Figure 5.3).

The entire area surrounding the sports facility was levelled and is used for parking (Photo 5.2). On an annual basis, the site is used by the circus and an amusement park company (with merry-go-rounds, ferris wheel, etc.).

A berm was constructed along the northern boundary of the site (Photo 5.4) to divert storm water to a culvert extending underneath Mandela Drive (Photo 5.5). Sewer manholes were noted on the northern boundary of the site adjacent to the berm (Photo 5.6).

Photo 5.1: Sports facility with floodlights

Photo 5.2: Levelled area on site used for parking

Photo 5.3: Area where building rubble is present

Photo 5.4: Berm along northern boundary

Photo 5.5: Storm water culvert under Mandela Drive

Photo 5.6: Open sewer manhole

An old water pipeline, partially excavated (Photo 5.7), is present along the eastern boundary of the site. A Telkom line also used to be present along the eastern boundary (Photo 5.7).

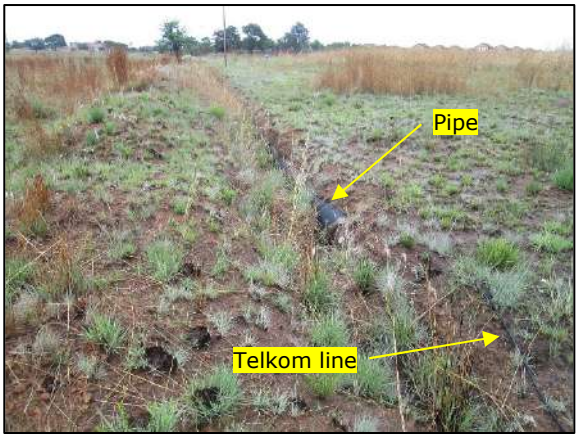


Photo 5.7: Partially excavated pipeline and remains of Telkom infrastructure

Figure 5.3: Aerial view of the site

5.3.6 Surrounding land uses

The site is located within the eMalahleni urban area (Figure 5.3) and is surrounded by various land uses, e.g. residential (Del Judor x4), businesses, etc.

Mandela Drive is located along the northern boundary of the site (Photo 5.8; Figure 5.3) and Nita Avenue along the western boundary (Photo 5.8; Figure 5.3).

A Nissan motor dealership, Highveld View Estate and Indlela Lodge are present west of Nita Avenue (Figure 5.3; Photo 5.9). Further west is the quarry belonging to Afrisam Aggregates and Ready-mix (Figure 5.4).

Photo 5.8: Nita Avenue and Mandela Drive junction

Photo 5.9: Nissan Dealership

The Portuguese Club and Casa Portuguesa Restaurant are located on the southern boundary of the site (Figure 5.3).

The properties north and east of the site are currently vacant (Figure 5.4) and are owned by the eMalahleni Local Municipality. The Highveld Mall, the Ridge Casino and Entertainment Complex and the N4 national road are located further towards the east (Figure 5.4).

Figure 5.4: View of the site in relation to surrounding land uses

Sensitivity Assessment
The screening report (as per the outcome of the National Screening Tool, 2017; Appendix 1) produced a Medium sensitivity for the Civil Aviation Theme due to the site being located between 8 and 15 km of a civil aviation aerodrome.

According to Google Earth and local knowledge of the area, the closest aerodrome is located 9km north west of eMalahleni near the Paxton Correctional Services facility (i.e. the prison). Helipads may however, be present at the various hospitals and/or on private properties in the surrounding area.

The proposed site is located within an already developed area as indicated in Figure 5.4. The height of buildings is restricted to three storeys as per the zoning certificates (Appendix 13). It is therefore not expected that the proposed development will impact on any aviation paths. The sensitivity rating for the Civil Aviation Theme should therefore be **Low.**

5.4 Geology

5.4.1 Underlying geology

According to Hansmeyer (2010), the site is underlain by rhyolite of the Selons River Formation, Rooiberg Group (Figure 5.5a).

Material was excavated from site (indicated as diggings in Figure 5.5b) between 1985 and 1990 for the construction of Mandela Drive and other streets in eMalahleni (Hansmeyer, 2010). The borrow pit was subsequently backfilled with building rubble and sand. Figure 5.8 provides a schematic cross-section of the site indicating the areas excavated and associated geology.

The closest mine (quarry belonging to Afrisam Aggregates and Ready-mix) is located a few hundred meters west of the site (Figure 5.4).

The said site is not subject to dolomite related instabilities. In addition, the site is not located in an area of known active seismicity.

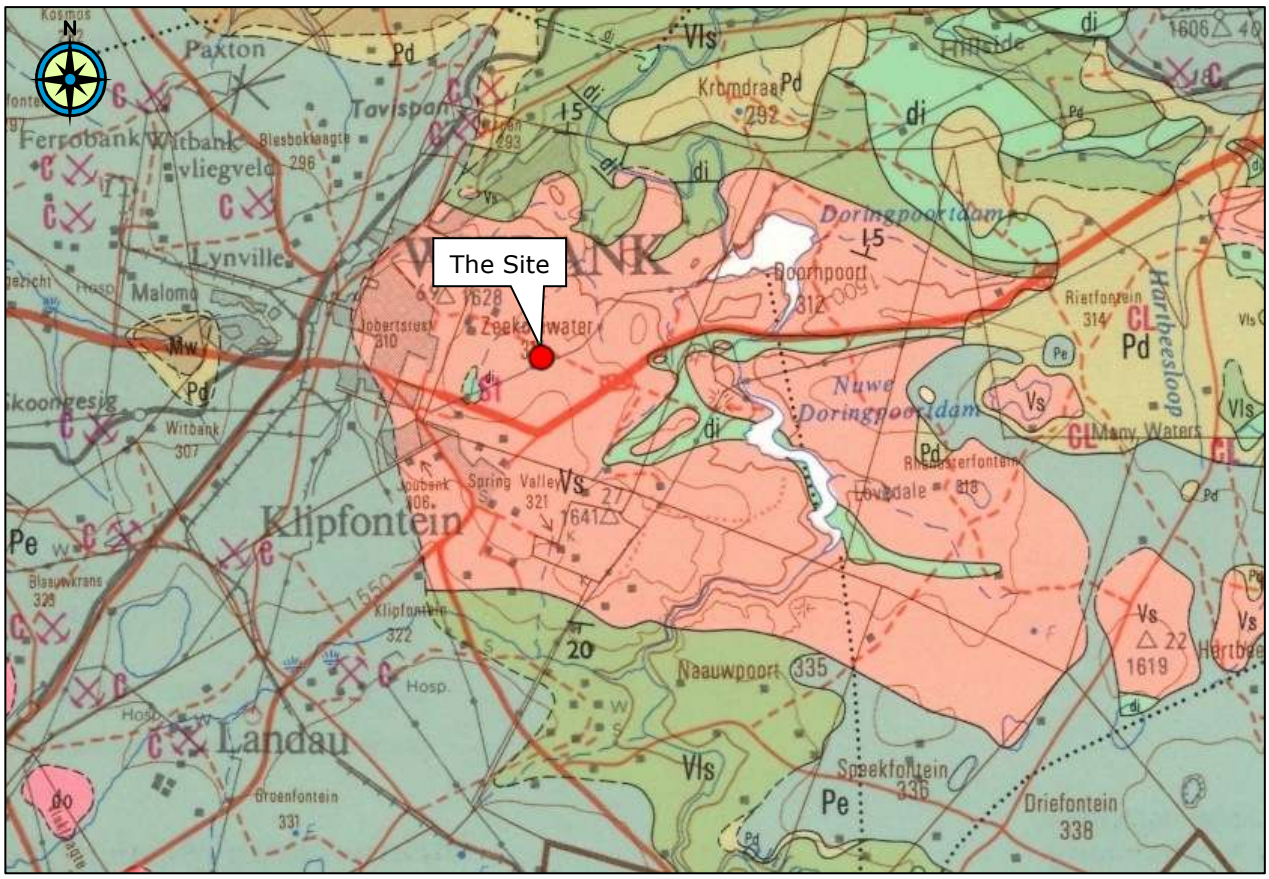


Figure 5.5a: Geology of the site (taken from 1: 250 000 Geological Series 2528 Pretoria)

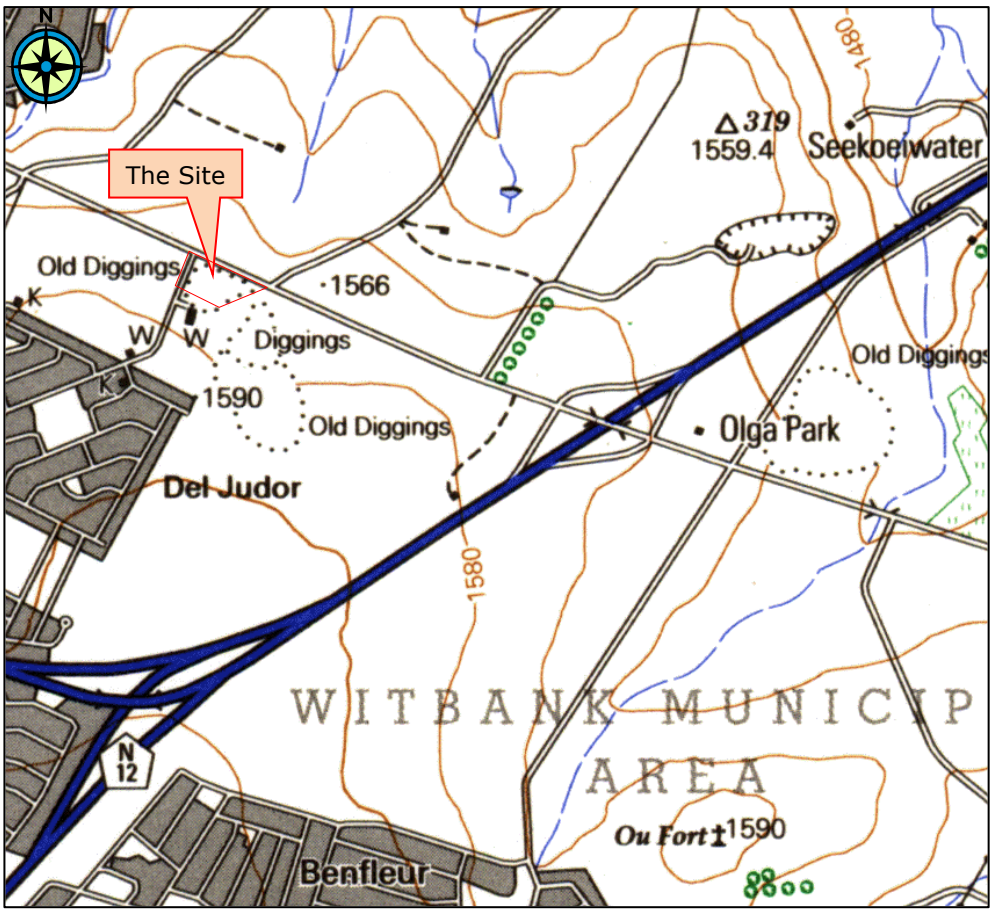


Figure 5.5b: Diggings indicated on site and in surrounding area
(taken from 1: 50 000 2529 CD)

5.4.2 Geotechnical zones identified

Hansmeyer (2010) demarcated the site into the following three (3) geotechnical zones (Figure 5.6) as defined by the NHBRC Site Classes:

Zone 2B: Site Class P, C2 (Figure 5.6)
- Seepage at levels varying between 0.7-2.3 m.
- Highly compressible founding material.
- Structures require deep foundations and good drainage (cut-off drains).

Zone 2C: Site Class P, C2 (Figure 5.6
- Imported material up to 2.6 m thick (varies in thickness).
- Highly compressible.
- Imported material to be replaced by inert material or the fill and underlying soft Selons River rhyolite to be cut to spoil.
- Highly permeable.
- Thoroughly wetted up – shallow perched water table.
- Subsurface drainage required.

Zone 3 (Figure 5.6) – No Development: Site Class P
- No development should take place in this zone due to the leaking sewerage manhole

According to Hansmeyer (2010), the north western corner of the site was demarcated as Geotechnical Zone 3 (Figure 5.6) due to a leaking sewer manhole. During the numerous site visits undertaken by AdiEnvironmental, no

leakage from the sewer manhole or anywhere else on site was noted. Geotechnical Zone 3 (Figure 5.6) would thus no longer be applicable to the said site.

From a geotechnical point of view, the said site can thus be development subject to the implementation of recommendations made by Hansmeyer (2010).

5.5 Topography

The proposed site lies between 1584 meters above mean sea level (mamsl) and 1590 mamsl (Figure 5.7).

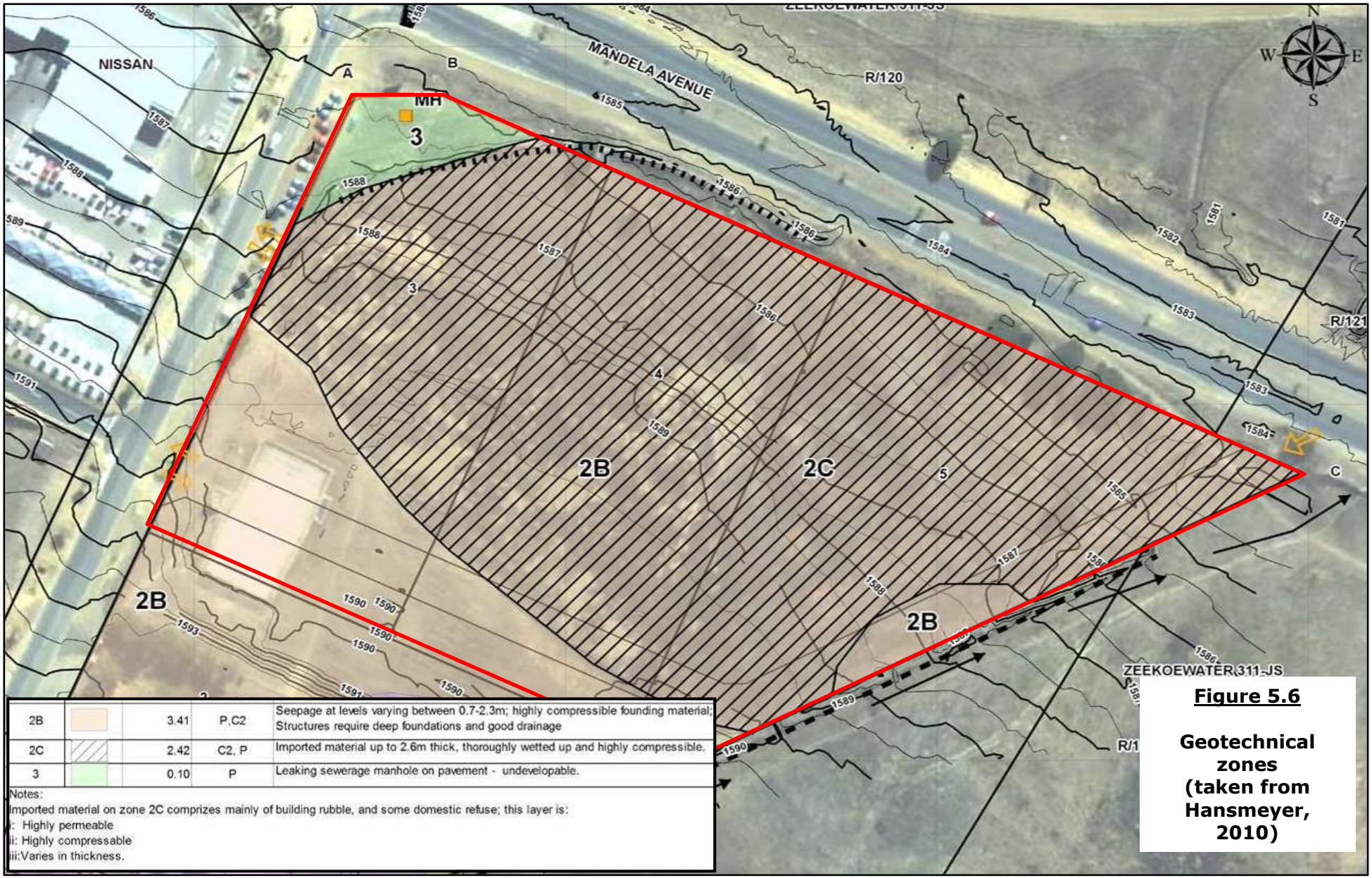
The natural slope of the site is towards the north and Mandela Drive (Figure 5.7). According to WSP (2010), the site has an average fall of >2%.

Past excavation and construction activities on site have resulted in a terraced topography as indicated in Figure 5.8. Material was excavated from site (indicated as diggings in Figure 5.5b) between 1985 and 1990 for the construction of Mandela Drive and other streets in eMalahleni (Hansmeyer, 2010). The borrow pit was subsequently backfilled (with building rubble and sand), levelled and grassed (Figure 5.8). This backfilled area represents most of the site.

The Portuguese Club and Casa Portuguesa Restaurant (southern boundary of the site, Figure 5.3) are located on an elevated area as indicated in Figure 5.8.

Other impacts on the topography include the presence of the sports facility, excavation of trenches, construction of berms, building rubble/soil stockpiles, roads, etc. (Figure 5.3). The topography of the surrounding area has also been impacted by other activities such as businesses, quarries, roads, etc. (Figure 5.3 and Figure 5.4).

Although the topography of the site has been altered, Hansmeyer (2010) indicated that the potential for slope failure is minimal (small) and that the gradient of the site is suitable for development.



2B		3.41	P,C2	Seepage at levels varying between 0.7-2.3m; highly compressible founding material; Structures require deep foundations and good drainage
2C		2.42	C2, P	Imported material up to 2.6m thick, thoroughly wetted up and highly compressible.
3		0.10	P	Leaking sewerage manhole on pavement - undevelopable.

Notes:
Imported material on zone 2C comprizes mainly of building rubble, and some domestic refuse; this layer is:
i: Highly permeable
ii: Highly compressable
iii:Varies in thickness.

Figure 5.6

Geotechnical zones (taken from Hansmeyer, 2010)

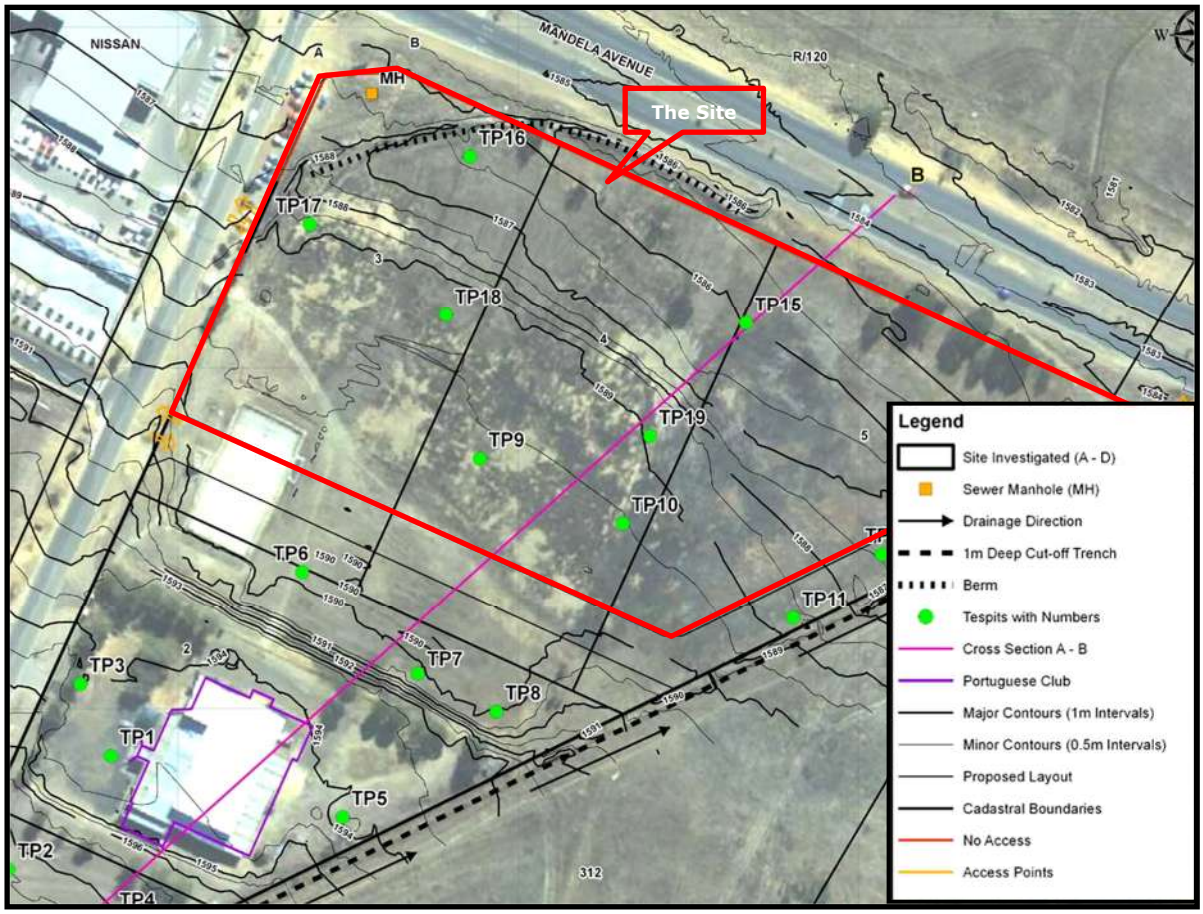


Figure 5.7: Topography and existing infrastructure (taken from Hansmeyer, 2010)

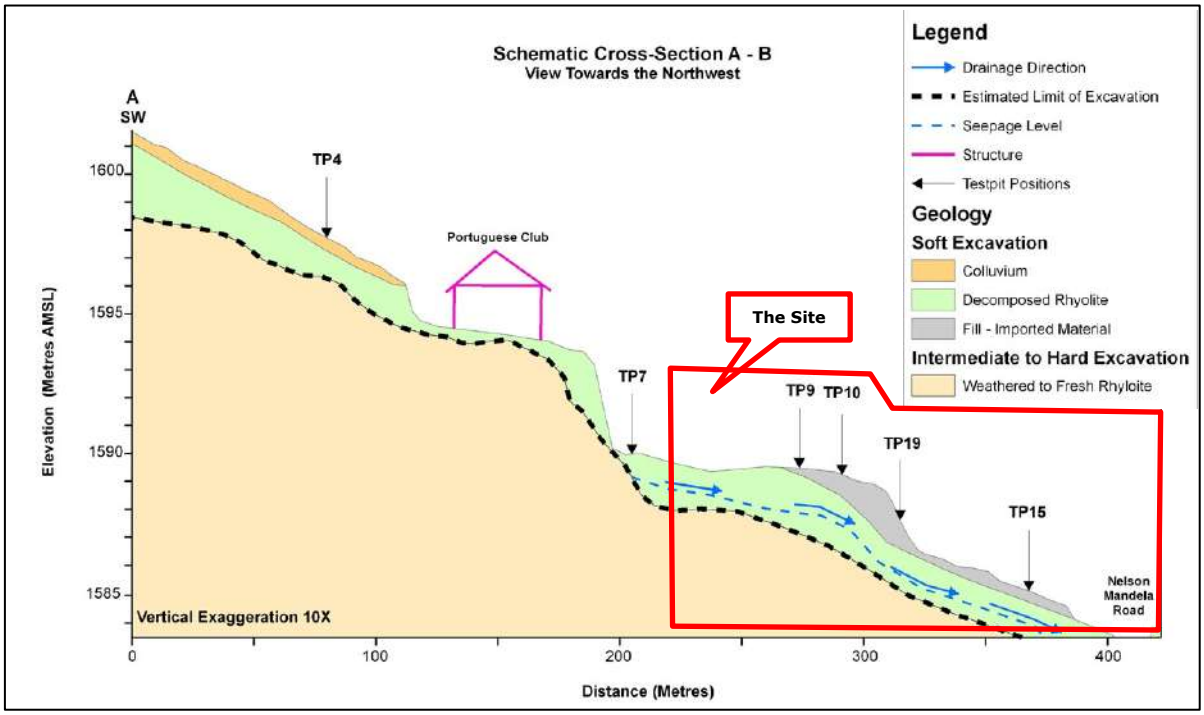


Figure 5.8: Schematic cross-section of site (taken from Hansmeyer, 2010)

5.6 Soil

5.6.1 Soil properties

Figure 5.8 provides a schematic cross-section of the site indicating the areas excavated, associated geology and soils.

According to Hansmeyer (2010), most of the site used to be covered with a well-developed pedocrete overlying soft excavatable gravely rhyolite residuum (Table 5.3). However, both these layers were excavated from site (between 1985 and 1990) for the construction of Mandela Drive and other streets in eMalahleni. According to Hansmeyer (2010), the deeper section of the borrow pit was most probably more than 2m below surface (Figure 5.8). The borrow pit was subsequently backfilled (mainly with building rubble and sand), levelled and grassed (Figure 5.8).

Table 5.3: Generalised soil and bedrock profile (taken from Hansmeyer, 2010).

Soil / Bedrock	Section	Ave. Depth (m)	Ave. Thickness (m)	Geotechnical Constraint
Colluvium	Originally, the whole site; only southern and northerly sections were left intact – refer to TP's 1,2,4,511,12, and 16.	0.3	0.3	Loose & usually medium compressible
Pedocrete	Lower-lying , north-easterly section; central section mined out and backfilled with building rubble.	0.2 – 0.8	0.6	Tends to pinch out over short distances; intermediate excavatable; require grid roller to break down; tends to break into large tabular blocks when excavated.
Rhyolite residuum	Generally whole site, totally excavated in central section	0.3 – 1.5	0.9	Low to medium compressible
Soft becoming hard rhyolite bedrock	Scattered throughout, present as pinnacles on occasion	1.0	1.1	Intermediate to hard excavation

5.6.2 Soil forms

Venter (2020b) indicated that most of the site (i.e. the levelled area) falls within the Technosol group and more particularly the Johannesburg soil form, i.e. soil profiles covered by concrete structures, cement and waste materials including building gravel (Photo 5.10).

Photo 5.10: Johannesburg soil form present on the majority of the site (taken from Venter, 2020b)

The north western corner of the site falls within the Anthrosol group and more particularly, the Grabouw soil form. According to Venter (2020b), this soil form may represent the original soil profile but with varying degrees of disturbance (including significant compaction) (Photo 5.11). In these areas, rainwater infiltration is very limited (as a result of the compacted surfaces) resulting in increased storm water volumes flowing from site towards Mandela Drive and properties located to the north thereof.

Photo 5.11: Grabouw soil form present in the north western corner of the site (taken from Venter, 2020b)

According to Venter (2020b), no hydric (wetland) soil forms are present on site even though the vegetation in the central, northern and eastern portions of the site does indicate wetter conditions. The wet conditions are a result of the accumulation of water in the soils due to historical disturbances (e.g. removal of topsoil/subsoil, importing of gravel and other materials, compaction of the soils as a result of vehicles parking on site, etc.). In these areas, the soil is characterised by a shallow orthic topsoil (between 0.1 and 0.35 m deep), without any mottling, gleying or the presence of a gleyed horizon underneath (Venter, 2020b). The orthic topsoil is darkened as a result of weathered organic material (grass and other vegetation roots).

During rainfall events, water infiltrates the shallow topsoil horizon where vertical movement is limited (due to a mixture of hard plinthite and imported gravel) creating temporary wetness (on these compacted surfaces) before moving in a lateral direction towards the lower-lying landscape positions (Venter, 2020b).

5.6.3 Agricultural potential/land capability

The screening report (as per the outcome of the National Screening Tool, 2017; Appendix 1) produced a Medium sensitivity (land capability: low to moderate) for the Agricultural Combined Sensitivity Theme (Figure 5.9).

As already indicated, material was excavated from site (between 1985 and 1990) for the construction of Mandela Drive and other streets in eMalahleni. The borrow pit was subsequently backfilled (mainly with building rubble and sand), levelled and grassed (Figure 5.8).

Venter (2020b) indicated that most of the site (i.e. the levelled area) falls within the Technosol group and more particularly the Johannesburg soil form, i.e. soil profiles covered by concrete structures, cement and waste materials including building gravel (Photo 5.10). This soil form is not suitable for agricultural purposes. In addition, the proposed site is located within an already developed area as indicated in Figure 5.4. The sensitivity rating for the Agricultural Combined Sensitivity Theme should therefore be **Low.**

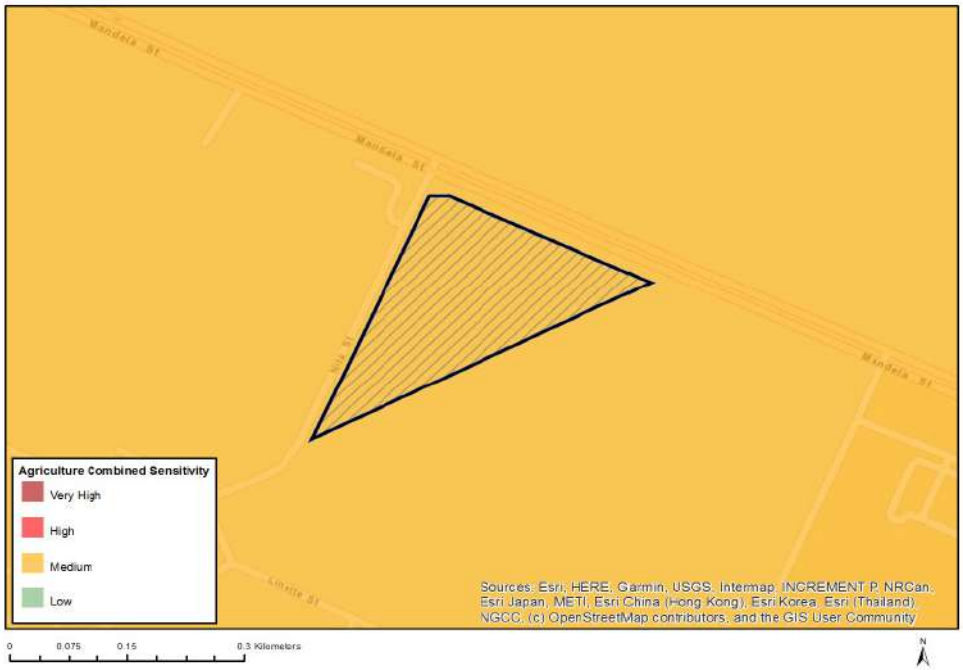


Figure 5.9: Agricultural Combined Sensitivity Theme (as per the outcome of the National Screening Tool, 2017)

5.7 Natural vegetation

5.7.1 Regional vegetation and conservation status

According to the 'The vegetation of South Africa, Lesotho and Swaziland', the site falls within the Mesic Highveld Grassland Bioregion, specifically the Rand Highveld Grassland (veld type Gm11) (Mucina & Rutherford, 2006; Figure 5.10). The vegetation type was previously referred to by Low and Rebelo (1998) as Moist Sandy Highveld Grassland (38) and Rocky Highveld Grassland (34) and by Acocks (1953) as Bankenveld (61).

This grassland is found at an altitude of 1 300 metres above mean sea level (mamsl) to 1 635 mamsl in areas between rocky ridges from Pretoria to eMalahleni (Witbank). It also extends onto ridges in the Stoffberg and Roossenekal regions as well as west of Krugersdorp.

This vegetation type is species-rich and comprises wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes. The most common grasses on the plains belong to the genera *Themeda, Eragrostis, Heteropogon* and *Elionurus*. A high diversity of herbs, many of which belong to the *Asteraceae* family, is also a typical feature. Rocky hills and ridges carry sparse woodlands with *Protea caffra* subsp. *caffra, Acacia caffra* and *Celtis africana*, accompanied by a rich suite of shrubs among which the genus *Searsia* (previously *Rhus*) is most prominent.

Almost half of the Rand Highveld Grassland has already been transformed by cultivation, urbanisation, plantations and dams. This vegetation type has been afforded the status of endangered with a conservation target of 24%. Only approximately 1% of this vegetation type is currently conserved.

Figure 5.10: Vegetation type (taken from Mucina and Rutherford, 2006)

The National List of Ecosystems that are Threatened and in need of protection (GN1002 of 2011), published under the National Environmental Management: Biodiversity Act (Act No. 10, 2004), lists this vegetation type as **Vulnerable**.

Vulnerable (VU) ecosystems - being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems.

The stated purpose of listing 'threatened ecosystems' is primarily to reduce the rate of ecosystem degradation and species extinction.

According to the National Biodiversity Assessment (2019), the Rand Highveld vegetation type is classified as Endangered (i.e. any remaining vegetation that resembles the Rand Highveld Grassland is considered to be of conservation importance).

Mpumalanga Biodiversity Conservation Plan (2006)
The site and surrounding area are indicated as **'No Natural Habitat Remaining'** (Figure 5.11a) in terms of the terrestrial biodiversity assessment of the Mpumalanga Biodiversity Conservation Plan (2006).

Figure 5.11a: Terrestrial biodiversity assessment of the Mpumalanga Biodiversity Conservation Plan, 2006

Mpumalanga Biodiversity Sector Plan (2013)

The Mpumalanga Tourism and Parks Agency reviewed and updated the Mpumalanga Biodiversity Conservation Plan (2006) in order to align the spatial data with the bioregional plan requirements of the South African National Biodiversity Institute (SANBI) and surrounding provinces.

The Mpumalanga Biodiversity Sector Plan (MBSP, 2013) was subsequently developed. The MBSP is a biodiversity planning tool that provides the most recent spatial biodiversity information to inform land-use and development planning (Lotter *et al*., 2014). The main mapping categories used in the MBSP (in descending order of importance in terms of meeting conservation targets), are:

- Protected Areas;
- Critical Biodiversity Areas (Irreplaceable and Optimal);
- Ecological Support Areas;
- Other Natural Areas;
- Modified (Heavily Modified and Moderately Modified: old lands).

According to the MBSP (2013), the site is classified as **Other Natural Areas** (Figure 5.11b). The area surrounding the said site is also classified as Other Natural Areas and Heavily Modified (Figure 5.11b).

Other Natural Areas (ONAs)	Areas that have not been identified as a priority in the current systematic biodiversity plan, but retain most of their natural character and perform a range of biodiversity and ecological infrastructural functions. Although they have not been prioritised for biodiversity, they are still an important part of the natural ecosystem.	An overall management objective should be to minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. These areas offer the greatest flexibility in terms of management objectives and permissible land-uses, but some authorisation may still be required for high-impact land-uses.

The closest Critical Biodiversity Area (CBA) is located approximately 400m east of the site opposite the Highveld Mall (Figure 5.11b).

Figure 5.11b: Terrestrial biodiversity assessment of the Mpumalanga Biodiversity Sector Plan, 2013

The proposed development site does not fall within a nature reserve, conservancy or other protected area (Mpumalanga Biodiversity Sector Plan, 2013; Figure 5.11c). The Witbank Nature Reserve is located approximately 3.5km east of the site (Figure 5.11c).

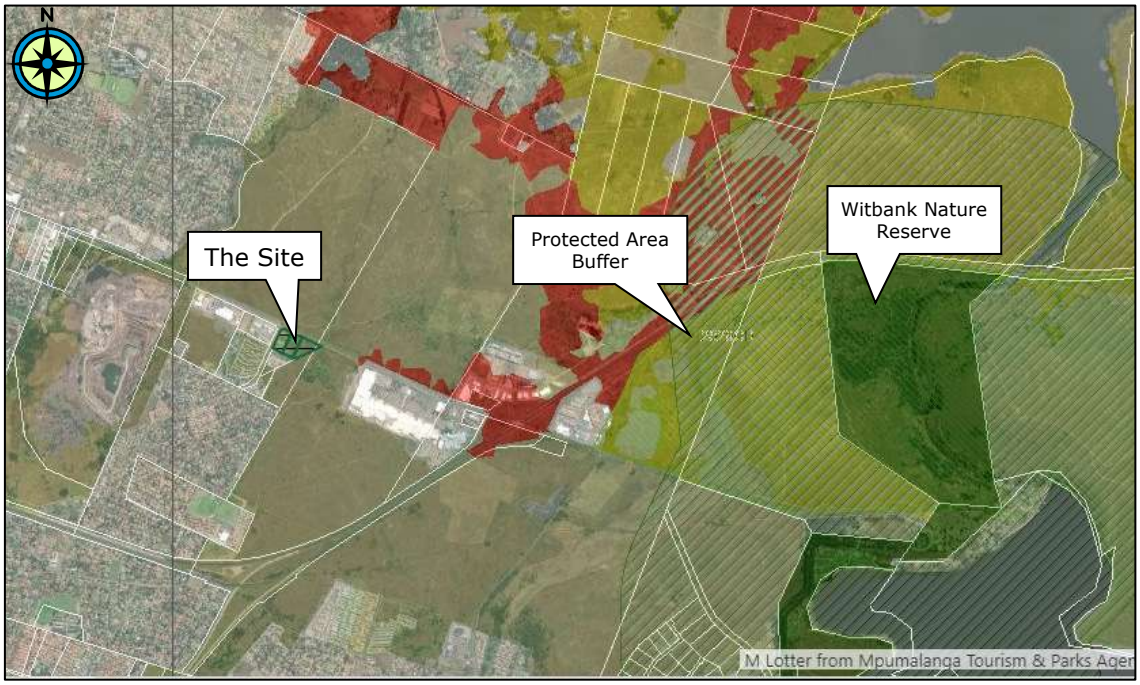


Figure 5.11c: Location of site in relation to the nearest Protected Area (taken from Mpumalanga Biodiversity Sector Plan, 2013)

Based on the above-mentioned, the proposed project does not trigger any listed activities in Listing Notice 3 of the EIA Regulations, 2014 (as amended).

5.7.2 Onsite vegetation

A screening assessment of the vegetation and possible onsite wetlands was undertaken by I Venter of Kyllinga Consulting (referred to as Venter, 2020a). Subsequently, a wetland assessment and delineation study was undertaken by I Venter of Kyllinga Consulting (referred to as Venter, 2020b). Copies of the reports are provided in Appendix 3 and should be consulted with regards to the methodology used.

As already indicated, material was excavated from site (indicated as diggings in Figure 5.5b) between 1985 and 1990 for the construction of Mandela Drive and other streets in eMalahleni (Hansmeyer, 2010). The borrow pit was subsequently backfilled (with building rubble and sand), levelled and grassed (Figure 5.8). This backfilled area represents most of the site.

Other impacts on the vegetation of the site include the presence of the sports facility, excavation of trenches, construction of berms, building rubble/soil stockpiles, roads, etc. (Figure 5.3).

Venter (2020a; 2020b) identified the following three vegetation units on site namely:

- Modified grassland;
- Artificial ponding;
- Wetland;
- Transformed.

Figure 5.12 provides a vegetation map of the proposed development site.

Figure 5.12: Vegetation and wetland units identified (taken from Venter, 2020a)

Modified grassland (Figure 5.12; Photo 5.12)
The Modified Grassland vegetation unit consists of a mix of alien and invasive species with a few common indigenous plant species as indicated in Table 5.4a. Venter (2020a) indicated that the high level of disturbance is present across the site (i.e. up to the site boundaries). *Pennisetum clandestinum* (Kikuyu) is present in patches throughout most of the site and appears to be informally harvested (for resale). Numerous other weeds are also present (Table 5.4a).

Table 5.4a: Plant species recorded in the Modified Grassland vegetation unit (Venter, 2020a)

SPECIES	GROWTH FORM	ALIEN/INVASIVE/ INDIGENOUS	INDICATOR
Acacia karroo	Tree	Indigenous	Widespread
Acacia mearnsii	Tree	Category 1b invader	Disturbance
Acacia melanoxylon	Tree	Category 1b invader	
Arundo donax	Grass	Category 1b invader	
Bidens bipinnata	Herb	Alien	
Bidens pilosa	Herb	Alien	
Canna indica	Shrub	Category 1b invader	
Chamaecrista mimosoides	Herb	Indigenous	Widespread
Cymbopogon validus	Grass	Indigenous	Rocky areas
Cynodon dactylon	Grass	Cosmopolitan	Widespread
Datura stramonium	Shrub	Category 1b invader	Disturbance
Eragrostis gummiflua	Grass	Indigenous	
Eragrostis plana	Grass	Indigenous	Disturbance/ wetness
Grevillea robusta	Tree	Category 3 invader	Disturbance
Hyparrhenia hirta	Grass	Indigenous	
Melia azedarach	Tree	Category 1b invader	
Melinis repens	Grass	Indigenous	
Paspalum dilatatum	Grass	Alien	
Pennisetum clandestinum	Grass	Alien	
Pogonarthria squarrosa	Grass	Indigenous	Rocky areas
Schizachyrium sanguinum	Grass	Indigenous	
Searcia lancea	Tree	Indigenous	Widespread
Solanum mauritianum	Shrub	Category 1b invader	Disturbance
Tagetus minuta	Shrub	Alien	
Verbena bonariensis	Forb	Category 1b invader	Disturbance/ wetness

Venter (2020a) confirmed that the vegetation to the east of the site (i.e. outside of the site boundaries; Figure 5.12) is a remnant of the Rand Highveld Grassland vegetation type. The remaining terrestrial vegetation present on the proposed site has been highly modified/transformed (due to past disturbances on site) and no longer resembles this vegetation type (Venter, 2020a).

Artificial ponding (Figure 5.12; Photo 5.14)
Initially, Venter (2020a) identified an Artificial ponding area on site as indicated in Figure 5.12. During the subsequent wetland assessment and delineation study, a second Artificial ponding area (Figure 5.17) was also identified (Venter, 2020b).

Here, water artificially ponds on the existing fill on the site resulting in the establishment of some wetland species (sedges - indicators of wetness) as indicated in Table 5.4b. These areas are however, dominated by *Pennisetum clandestinum, Hyparrhenia hirta, Cyperus congestus* and *Trifolium repens*.

According to Venter (2020a; 2020b), the species composition indicates wetness as well as disturbance (Table 5.4b).

Table 5.4b: Plant species recorded in the Artificial Ponding vegetation unit (Venter, 2020a; Venter, 2020b)

SPECIES	GROWTH FORM	ALIEN/INVASIVE/ INDIGENOUS	INDICATOR
Agrostis lachnantha	Grass	Indigenous	Wetness
Andropogon eucomis	Grass	Indigenous	
Cymbopogon excavates	Grass	Indigenous	Widespread
Cynodon dactylon	Grass	Cosmopolitan	
Cyperus congestus	Sedge	Indigenous	Wetness
Cyperus species	Sedge	Indigenous	
Datura stramonium	Shrub	Category 1b invader	Disturbance
Eragrostis plana	Grass	Indigenous	Disturbance/wetness
Fuirena species	Sedge	Indigenous	Wetness
Paspalum dilatatum	Grass	Alien	Disturbance
Pennisetum clandestinum	Grass	Alien	
Pseudognaphalium luteo-alba	Forb/herb	Alien	
Schoenoplectus muriculata	Sedge	Indigenous	Wetness
Sporobolus africanus	Grass	Indigenous	Disturbance/wetness
Trifolium repens	Herb	Alien	Moistness
Verbena bonariensis	Forb	Category 1b invader	Disturbance/wetness

Venter (2020b) however, did not classify the Artificial Ponding areas as wetland areas since no hydromorphic features were observed in the soil (see Section 5.6.2 and Section 5.9.4 for further details regarding the Artificial Ponding areas).

Wetland (Figure 5.12)/Artificial Wetland (Figure 5.17; Photo 5.13)
Initially, Venter (2020a) identified a Wetland vegetation unit in the northern portion of the site (i.e. directly adjacent to the infill on site) as indicated in Figure 5.12.

During the subsequent wetland assessment and delineation study, a smaller wetland was delineated and renamed Artificial Wetland (Venter, 2020b) as indicated in Figure 5.17. See Section 5.6.2 and Section 5.9.4 for further details regarding the Artificial Wetland.

Although a number of alien species are present in the wetland unit (Table 5.4c), the vegetation is dominated by *Hyparrhenia hirta, Imperata cylindrica, Fimbristylus complanata* and *Cyperus congestus.* According to Venter (2020b), the species composition (Table 5.4c) indicates that the unit is wet for a significant period of time and is clearly affected by various impacts.

Table 5.4c: Plant species recorded in the Artificial Wetland vegetation unit (Venter, 2020a; Venter, 2020b)

SPECIES	GROWTH FORM	ALIEN/INVASIVE	INDICATOR
Agrostis lachnantha		Indigenous	Wetness
Arundo donax	Grass	Category 1b invader	Disturbance
Cyperus congestus	Cyperaceae	Indigenous	Wetness
Cyperus species	Cyperaceae	Indigenous	Wetness
Eragrostis curvula	Grass	Indigenous	Generalist
Fimbristylus complanata		Indigenous	Wetness
Fuirena species		Indigenous	Wetness
Hyparrhenia hirta	Grass	Indigenous	Disturbance
Hyparrhenia tamba	Grass	Indigenous	Moistness
Imperata cylindrica	Grass	Indigenous	Wetness
Indigofera species		Indigenous	Generalist
Mellilotis alba	Legume	Alien	Disturbance
Monopsis decipiens		Indigenous	Wetness
Pennisetum clandestinum (kikuyu)	Grass	Alien	Disturbance
Pseudognaphalium luteo-alba	Forb	Alien	Disturbance
Schoenoplectus muriculata	Cyperaceae	Indigenous	Wetness
Senecio erubescens		Indigenous	Moistness
Sporobolus africanus	Grass	Indigenous	Disturbance/wetness
Typha capensis		Indigenous	Wetness
Verbena bonariensis	Forb	Category 1b invader	Disturbance/wetness

Venter (2020b) however, did not classify the Artificial Wetland area as a wetland since no hydromorphic features were observed in the soil (see Section 5.6.2 and Section 5.9.4 For further details).

Transformed (Figure 5.12)
A small sports facility is present in the south western corner of the site adjacent to Nita Avenue and is indicated as Transformed in Figure 5.12.

Based on the above-mentioned, Venter (2020a) indicated that the vegetation on site is of **Low sensitivity**. A full vegetation assessment was therefore not required (Venter, 2020a).

Photo 5.12: The Modified Grassland vegetation unit present on the levelled area (southern portion of the site)

Photo 5.13: The vegetation of the Artificial Wetland (northern portion of the site)

Photo 5.14: The vegetation of the Artificial Ponding area (south eastern corner of the site)

5.7.3 Species of Conservation Concern

The term 'Species of Conservation Concern' refers to the IUCN threatened and Near Threatened categories as well as the South African Red List categories (i.e. Critically Rare, Rare and Declining).

The following three Red Data plant species are recorded on the PRECIS Database of the South African National Biodiversity Institute for the quarter degree square 2529CD:

Latin Name	Status	Habitat	Habitat on site
Encephalartos lanatus (Olifants River cycad)	Near threatened	Sheltered rocky ledges	NO
Frithia humilis	Endangered (EN)	Very shallow soils derived from coarse material from the Irrigasie formation, Ecca Group.	NO
Nerine gracilis	Vulnerable (VU)	Damp areas in undulating grassland	NO

The following three plant species are indicated in the screening report (as per the outcome of the National Screening Tool, 2017; Appendix 1):

Latin Name	Status	Habitat	Habitat on site
Pavetta zeyheri subsp middelburgensis	Rare	Outcrops of rocks and boulders or rocky sheets	NO
Pachycarpus suaveolens	Vulnerable B1ab(iii)	Short or annually burnt grasslands, 1400-2000 m.	NO
Brachycorthis conica subsp transvaalensis	Critically Endangered	Short, open grassland and wooded grassland, on sandy gravel overlying dolomite, sometimes also on quartzite, 1 000-1 705 m.	NO

It is highly unlikely that any of the above-mentioned species would be present on site due to the disturbed nature of the vegetation. In addition, Venter (2020a; 2020b) did not record any threatened plant species during the site visits.

5.7.4 Protected plant species

In addition to the IUCN categories, the following legislation affords protected status to selected indigenous plant species:

- National Forests Act (Act 84 of 1998),
- NEMA Biodiversity Act (Act 10 of 2004, as amended in 2007), and
- Mpumalanga Nature Conservation Act (No.10 of 1998).

National Forests Act (Act 84 of 1998)

The National Forests Act lists 47 tree species that may not be removed or damaged without a license from the Department of Agriculture, Land Reform and Rural Development (previously the National Department of Agriculture).

None of the 47 tree species listed in Schedule A of this Act occur on site or its immediate surroundings.

NEMA Biodiversity Act (Act 10 of 2004, as amended in 2007)

The intention of the Biodiversity Act is to protect plant species (e.g. cycads, yellow arum lily, protea, etc.) that are directly threatened in terms of their utilisation. The destruction, collection or trading of any species listed in this Act requires a permit.

No plant species listed in the NEMA Biodiversity Act were noted on site.

Mpumalanga Nature Conservation Act (No.10 of 1998)

A number of plant species are protected in the Mpumalanga Province under the Mpumalanga Nature Conservation Act, whether they are considered to be threatened or not. This includes, but is not limited to, the following common names: ferns, flame lilies, christmas bells, pineapple flowers, clivia, nerine, crinum, ground lily, fire lily, irises, all orchids. A permit must be obtained prior to their removal.

It is highly unlikely that protected plant species are present on site due to the disturbed nature of the vegetation.

5.7.5 Invasive species

A number of plant species are listed as alien invasive species in terms of the Alien Invasive Species (AIS) Regulations, as defined in the National Environmental Management Biodiversity Act (Act no. 10 of 2014). The AIS regulations place each declared alien invasive plant species into one of four categories and stipulates measures for the eradication of plants in each of the four categories.

Venter (2020a; 2020b) recorded a total of 17 alien and invasive species on site as indicated in Table 5.5.

Table 5.5: Alien and invasive species recorded on site during the site visit (taken from Venter, 2020a; Venter, 2020b)

SPECIES	GROWTH FORM	ALIEN/INVASIVE	VEGETATION UNIT (Figure 5.12 & 5.17)
Acacia mearnsii	Tree	Category 1b invader	Modified grassland
Acacia melanoxylon	Tree	Category 1b invader	
Arundo donax	Grass	Category 1b invader	Modified grassland; Artificial wetland
Bidens bipinnata	Herb	Alien	Modified grassland
Bidens pilosa	Herb	Alien	
Canna indica	Shrub	Class 1b invader	
Datura stramonium	Shrub	Category 1b invader	Modified grassland; Artificial ponding
Grevillea robusta	Tree	Category 3 invader	Modified grassland
Melia azedarach	Tree	Category 1b invader	
Mellilotis alba	Legume	Alien	Artificial wetland
Paspalum dilatatum	Grass	Alien	Modified grassland; Artificial ponding
Pennisetum clandestinum	Grass	Alien	Modified grassland; Artificial ponding; Artificial wetland
Pseudognaphalium luteo-alba	Forb	Alien	Artificial ponding; Artificial wetland
Solanum mauritianum	Shrub	Class 1b invader	Modified grassland
Tagetus minuta	Shrub	Alien	
Trifolium repens	Forb	Alien	Artificial ponding

SPECIES	GROWTH FORM	ALIEN/INVASIVE	VEGETATION UNIT (Figure 5.12 & 5.17)
Verbena bonariensis	Forb	Category 1b invader	Modified grassland; Artificial ponding; Artificial wetland

- *"Category 1a: Invasive species which must be combatted and eradicated. Any form of trade or planting is strictly prohibited.*
- *Category 1b: Invasive species which must be controlled and wherever possible, removed and destroyed. Any form of trade or planting is strictly prohibited.*
- *Category 2: Invasive species, or species deemed to be potentially invasive, in that a permit is required to carry out a restricted activity. Category 2 species include commercially important species such as pine, wattle and gum trees. Plants in riparian areas are Category 1b.*
- *Category 3: Invasive species which may remain in prescribed areas or provinces. Further planting, propagation or trade, is however prohibited. Plants in riparian areas are Category 1b."*

The above-mentioned plant species (Table 5.5) will have to be controlled on site during the construction and operational phases. Additional disturbances on site may result in additional species encroaching into the site.

5.7.6 Sensitivity Assessment

The screening report (as per the outcome of the National Screening Tool, 2017; Appendix 1) produced the following sensitivities:

- Plant species theme: **Low** sensitivity and a **Medium** sensitivity due to the possible presence of seven species.
- Terrestrial biodiversity theme: **Very high** sensitivity
    - Vulnerable ecosystem.

Plant species theme:

As indicated in Section 5.7.2, the vegetation of the site is transformed (due to past disturbances on site), with low species diversity (Table 5.4a, 5.4b and 5.4c). It no longer resembles the Rand Highveld Grassland vegetation type (Venter, 2020a).

In addition, it is highly unlikely that any of the threatened plant species (Section 5.7.3) would be present on site due to the disturbed nature of the vegetation. In addition, Venter (2020a; 2020b) did not record any threatened plant species during the site visits.

The site sensitivity for plant species theme is therefore **Low** (and not Medium as indicated in the Screening Report) due to the highly modified state of the site vegetation (Table 5.4), the low species diversity and the absence of habitat for the threatened species.

Terrestrial biodiversity theme:

The site falls within the Rand Highveld Grassland vegetation type, which is a Vulnerable vegetation type. Venter (2020a) confirmed that the vegetation to the east of the site (i.e. outside of the site boundaries) is a remnant of the Rand Highveld Grassland vegetation type. The remaining terrestrial vegetation on site has however, been highly modified/transformed (due to past disturbances on site) and no longer resembles this vegetation type (Venter, 2020a). In view of this, Venter (2020a) indicated that the vegetation on site is of **Low sensitivity.** The site sensitivity for the terrestrial biodiversity theme should be **Low** (and not Very High as indicated in the Screening Report).

5.8 Animal life

5.8.1 Regional conservation status

According to the MBSP (2013), the site is classified as **Other Natural Areas** in both the terrestrial (Figure 5.11) and aquatic biodiversity assessment. The area surrounding the said site is classified as Other Natural Areas and Heavily Modified.

No Critical Biodiversity Areas (CBA's) for aquatic species or Ecological Support Areas (ESA's) for fish are present on or near the site.

5.8.2 On-site habitats

As indicated in Section 5.7.2, the natural vegetation on site is highly modified/transformed due to past disturbances. Venter (2020a; 2020b) identified three vegetation units on site (Modified grassland; Artificial ponding; Artificial Wetland; Transformed; Figure 5.12 and Figure 5.17) which could provide some form of habitat for animal species.

The areas north of Mandela Drive and east of the site (Figure 5.3) are vacant and could provide habitat for animal species.

It is however, highly unlikely that large animal species would permanently inhabit the proposed site due to the human activity in the surrounding area (Figure 5.3) and the close proximity of domestic animals (e.g. dogs, cats, etc.).

Smaller animal species (e.g. rodents), birds, reptiles and amphibians are however, expected to be found on site. Spoor of small antelope, scrub hare pellets and a scrub hare were noted on site, which indicate that the site is utilized by smaller animal species. Bird species, e.g. the Cape Turtle Dove (*Streptopelia capicola)*, Blacksmith Plover (*Vanellus armatus)*, Crowned Plover (*Vanellus coronatus*) and Southern Red Bishop (*Euplectes progne*), were also noted on site.

5.8.3 Habitat for bullfrogs

As indicated in Section 6.5, a resident from Del Judor x4 (Mr. S. Bloy) indicated (email dated: 3 September 2020; Appendix 11) that he had '*seen bullfrogs on 2 occasions, once in December 2017 and again in December 2019, very close to the proposed site.* On both occasions, the area experienced heavy rainfall. The bullfrogs were noted in an artificial depression/ponding area in the southern portion of the site (Figure 5.13).

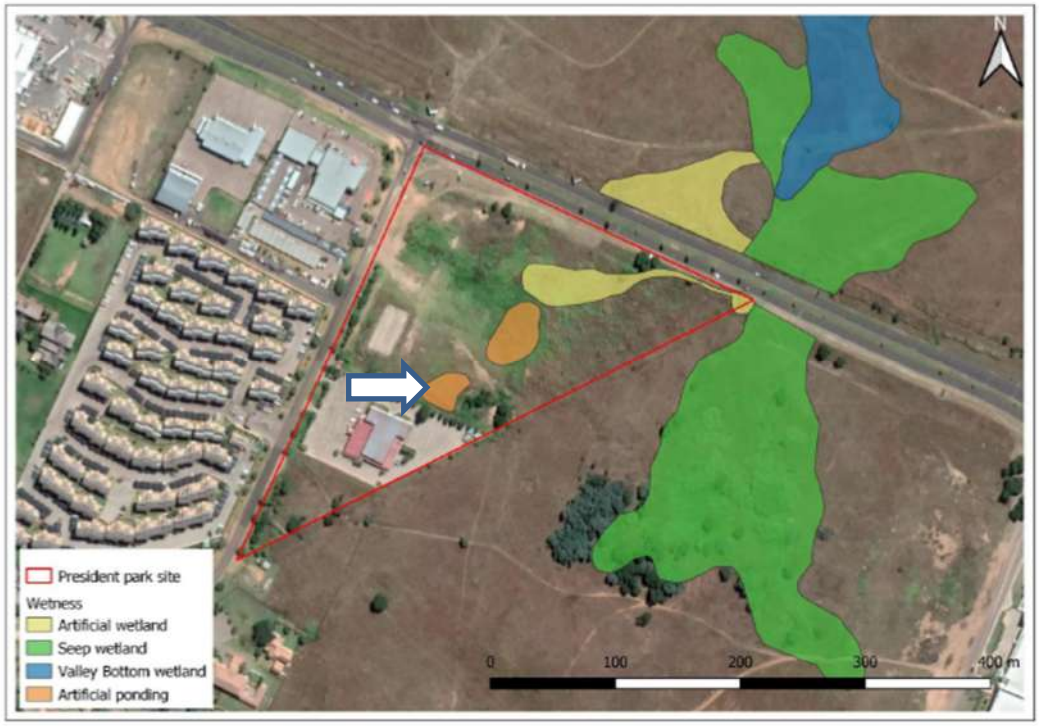


Figure 5.13: Artificial Ponding area in southern portion of the site where bullfrogs were previously noted.

In order to address this issue of concern raised through the public participation process, Mr. J.C.P van Wyk, a bullfrog specialist was appointed to conduct a bullfrog habitat assessment of the proposed development site.

Site visit (5 November 2020)
A site visit (5 November 2020) was undertaken by the bullfrog specialist, the wetland specialist (I. Venter of Kyllinga Consulting) and AdiEnvironmental. During this site visit, the site and surrounding area were inspected for suitable habitat and breeding places as well as for any evidence of bullfrogs. **No bullfrogs were noted during this site visit.**

Bullfrog specialist report
Subsequent to this site visit, the following report was produced: *Giant Bullfrog (Pyxcephalus adspersus) Habitat assessment and long-term survival plans at President Park x6, eMalahleni (Witbank). Report prepared by J.C.P. van Wyk. Report dated: November 2020.* A copy of the report (referred to as Van Wyk 2020) is provided in Appendix 3.

In the above-mentioned report, Van Wyk (2020) indicated the following in terms of the suitability of the site for bullfrogs**:** '*The actual study site itself (development site) is not of high conservation value. Even if the site is left in its current condition of neglect, it is not guaranteed that the giant bullfrog would survive in the long run due to the many anthropogenic factors on and around the site. Neighbouring properties and roads restrict bullfrog foraging, hibernation-aestivation and dispersal. Habitat fragmentation has taken place and walls, buildings, roads and other structures increasingly inhibit movement'.*
<u>In other words, the proposed site does not provide suitable habitat for bullfrogs.</u>
See the report provided in Appendix 3 for further information.

Subsequent monitoring of site (January/February 2021)

During January 2021, the tropical storm/cyclone Eloise resulted in above-average rainfall in the eastern parts of Southern Africa, including eMalahleni. It was thus the ideal opportunity to monitor the site for the presence of bullfrogs. AdiEnvironmental therefore monitored the site from 25 January 2021 until 4 February 2021.

The following monitoring report is provided in Appendix 3: *Monitoring of the President Park x6 site after the Cyclone Eloise rains (25 January – 4 February 2021) by AdiEnvironmental cc. Report prepared by: A. Erasmus and R. J. van Rensburg. Report dated: 5 February 2021.*

On 29 January 2021, AdiEnvironmental noted a Giant Bullfrog within the Artificial Ponding Area (Figure 5.13 and Photo 5.15). Mr. Bloy also informed the bullfrog specialist that he had sighted the bullfrog on the said day. This was the first and last time that the bullfrog was seen.

Photo 5.15: The bullfrog within the artificial ponding area (@ 29 January 2021)

On 30 January 2021, the bullfrog was no longer observed on site (i.e. by AdiEnvironmental and Mr. S. Bloy – see the monitoring report provided in Appendix 3). On the said day, Mr. Bloy indicated that he had noted eggs on site. Tadpoles and eggs were however, noted by AdiEnvironmental on 31 January 2021 within the ponded vehicle tracks (Photo 5.16a).

As indicated in the monitoring report (Appendix 3), AdiEnvironmental visited the site daily to monitor the progress of the tadpoles. It was soon evident that the artificial ponding area and the ponded vehicle track area (Photos 5.16b & c) do not contain water for long periods of time (as previously reported by Mr. Bloy).

Photo 5.16a: Tadpoles within ponded vehicle tracks (@ 1 February 2021)

Photo 5.16b: Tadpoles in adjacent ponded area (@ 2 February 2021)

Photo 5.16c: Ponded vehicle tracks with tadpoles (@ 32 February 2021)

Photo 5.16d: View of dead tadpoles (@ 4 February 2021)

MTPA site visit (4 February 2021)

Dr. Hannes Botha of the Mpumalanga Tourism and Parks Agency (MTPA) was contacted to conduct a site visit and provide input regarding whether or not suitable habitat for bullfrogs is present on site. The said site visit took place on 4 February 2021.

During the site visit, AdiEnvironmental and Dr. Botha noted that:

- all the artificial ponding areas (Artificial Ponding area and the ponded vehicle tracks) were dry;
- all the tadpoles had died (Photo 5.16c).
- no further bullfrog breeding efforts (eggs and/or tadpoles) were observed on site.

Subsequent to the site visit, Dr. Botha indicated the following (letter dated: 11 February 2021; Appendix 3): '*The site intended for development is clearly ecologically disturbed and is characterised by evidence of infilling, depositing of soil, rocks and other materials, fences, diggings, roads, fire events, invasive plants, and general neglect. Artificial ponding is present where depressions formed due to*

anthropogenic influences. The site intended for development is representative of an urban environment under pressure due to encroaching urbanisation'.

After reviewing the bullfrog specialist report (Van Wyk, 2020) and the above-mentioned monitoring report, Dr Botha indicated agreement in terms of the following:

1. *No Giant Bullfrogs were seen in the area intended for development during the site meeting. This was noteworthy because after the high rainfall experienced over the previous weeks one would have expected to see bullfrogs in the area where they were previously reported.*
2. *Development may start, when authorised by the proper regulating authority, but the depression/artificial pond area (area 1) should be left intact to act as a temporary refuge for bullfrogs that might be present at or may return to the area in following seasons.*
3. *Due to the physical size of the property, it was agreed that the maintenance of a buffer zone around the depression/artificial pond area would not be needed.*
4. *Should Giant Bullfrogs be found during the construction phase, the MTPA must be notified and the bullfrogs must be removed by the appointed ECO and the MTPA Herpetologist to be relocated to the nearest suitable bullfrog habitat.*

Addendum to bullfrog specialist report

The above-mentioned monitoring report (Appendix 3) and the letter from Dr. Botha (dated: 11 February 2021; Appendix 3) were provided to the bullfrog specialist who subsequently compiled an Addendum to the original specialist report (referred to as Van Wyk (2021)) and provided in Appendix 3.

According to Van Wyk (2021), it is evident that the Giant Bullfrog population on or near the site is very small and would require an exceptional rainy season for the population to breed successfully.

Van Wyk (2021) agreed that the recommendations of Dr. Botha be followed and that the depression/artificial ponding area be left intact as long as possible during the construction phase. Van Wyk (2021) further stated that the intention is not to force the developer to keep the pond intact forever *'but rather just to keep the pond going and available for as long as possible in the event that bullfrogs return for some reason'.*

Van Wyk (2021) indicated that enough information was gleaned from the above-mentioned monitoring report to make an informed decision and concluded that ***'there is no further objection against the development from a Giant Bullfrog perspective'.***

A copy of the Addendum was forwarded to Dr. Botha (MTPA) for his input. He subsequently indicated (e-mail dated: 19 February 2021; Appendix 3) the following: *"I agree with the addendum and support the conclusions and recommendations it contains."*

Sensitivity Assessment

The screening report (as per the outcome of the National Screening Tool, 2017; Appendix 1) produced the following sensitivities:

- Animal species theme: Low sensitivity.

This is correct as indicated in Section 5.8.2.

5.9 Surface water

5.9.1 Catchment

The proposed site is located within the Upper Olifants Water Management Area (WMA) and more specifically the B11J quaternary catchment (Figure 5.14).

Figure 5.14: The proposed site in relation to the B11J quaternary catchment.

5.9.2 Surface environments

The Olifants River is located 3.8 km east of the site (Figure 5.14). An unnamed tributary of the Olifants River (locally known as Madelspruit) is located approximately 800 m west of the site (Figure 5.1).

As indicated in Section 5.9.4, a Seep Wetland is located to the east of the site (Figure 5.17), which becomes a Valley Bottom Wetland/drainage area as indicated in Figure 5.17.

5.9.3 Surface water runoff

As indicated in Section 5.5, the natural slope of the site is towards the north and Mandela Drive (Figure 5.7). However, the topography has been impacted by past excavation and construction activities resulting in a terraced topography as indicated in Figure 5.8.

According to Engeolab cc. (2010), surface water runoff drains into the levelled area surrounding the Portuguese Club (Figure 5.8). From here, the water flows in a northerly direction into the next levelled area and the backfilled borrow pit (Figure 5.8). This results in the backfilled area becoming waterlogged and decanting along the northern boundary of the site.

The surface water on site is mostly diverted to the north eastern corner into a culvert that extends underneath Mandela Drive (Photo 5.5).

A trench was excavated around the sports facility to divert surface water runoff around the structure and towards Nita Avenue, where erosion as a result of the surface water runoff was noted (Photo 5.17).

A berm was constructed along the northern boundary of the site (Photo 5.4) to divert storm water to a culvert extending underneath Mandela Drive (Photo 5.5).

Photo 5.17: Storm water being diverted around the sports facility towards Nita Avenue

5.9.4 Wetlands

According to the NFEPA database, the site is located within an area identified as an Ecological Support Area (ESA): Wetland Clusters. Wetlands are indicated to be present east of the site in both the Freshwater Biodiversity Assessment and Mpumalanga Highveld Wetlands databases (Figures 5.15 and 5.16).

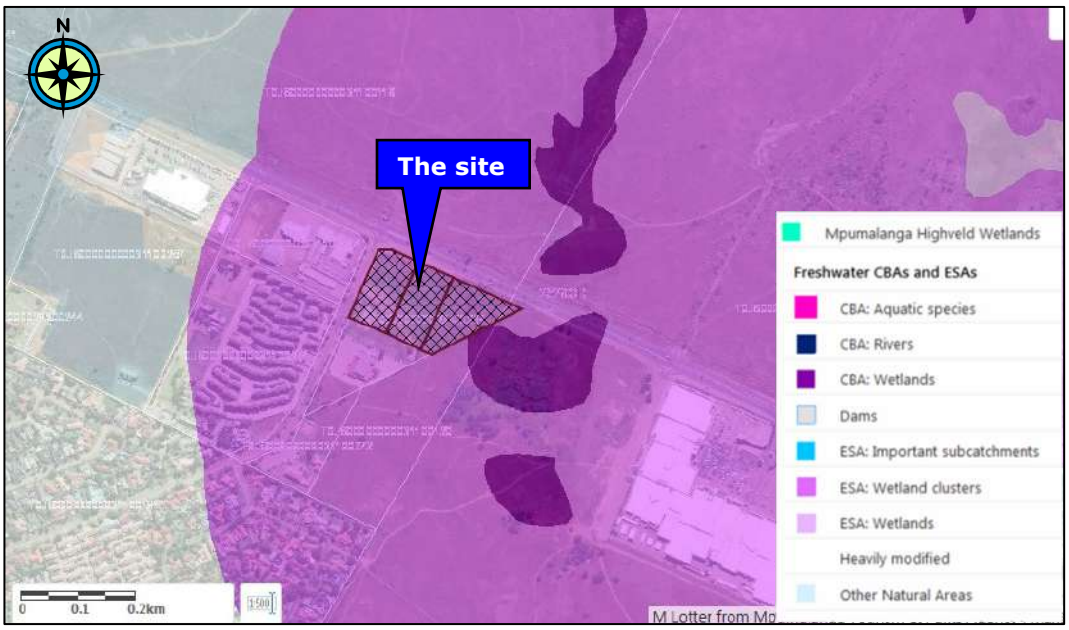


Figure 5.15: Freshwater biodiversity assessment of the Mpumalanga iodiversity Sector Plan, 2013

Figure 5.16: Mpumalanga Highveld Wetlands

A wetland assessment and delineation study was undertaken by I Venter of Kyllinga Consulting (referred to as Venter, 2020b). A copy of the report is provided in Appendix 3 and should be consulted with regards to the methodology used.

As indicated in Section 5.6, no hydric (wetland) soil forms are present on site even though the vegetation in the central, northern and eastern portions of the site does indicate wetter conditions (Venter, 2020b). The wet conditions are a result of the accumulation of water in the soils due to historical disturbances (e.g. removal of topsoil/subsoil, importing of gravel and other materials, compaction of the soils as a result of vehicles parking on site, etc.). In these areas, the soil is characterised by a shallow orthic topsoil (between 0.1 and 0.35 m deep), without any mottling, gleying or the presence of a gleyed horizon underneath (Venter, 2020b). The orthic topsoil is darkened as a result of weathered organic material (grass and other vegetation roots).

During rainfall events, water infiltrates the shallow topsoil horizon where vertical movement is limited (due to a mixture of hard plinthite and imported gravel) creating temporary wetness (on these compacted surfaces) before moving in a lateral direction towards the lower-lying landscape positions (Venter, 2020b).

As a result of the above-mentioned, Venter (2020b) identified an Artificial Wetland (Photo 5.18) and two Artificial ponding areas (Photo 5.19) on site as indicated in Figure 5.17. Venter (2020b) did not classify the Artificial Wetland and the Artificial Ponding areas as wetlands due to the absence of hydric (wetland) soil forms (see Section 5.6.2 for further details).

In other words, no wetlands are present on site.

Photo 5.18: The Artificial Wetland area in the northern portion of the site (@5 November 2020)

Photo 5.19: A view of the Artificial Ponding area on site (@ 29 January 2021)

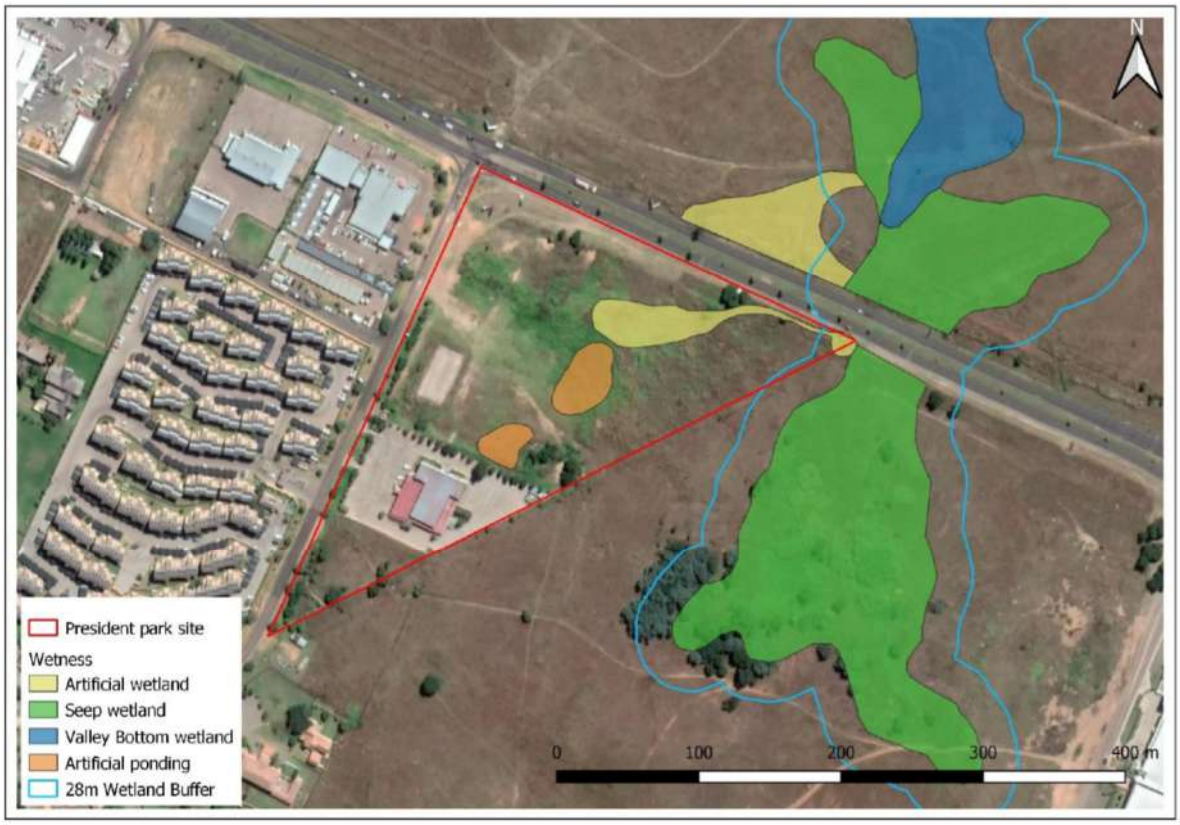


Figure 5.17: Wetland units identified (taken from Venter, 2020b)

Seep Wetland (Figure 5.15)

According to Venter (2020b), a Seep Wetland is present east of the site (Figure 5.17 and Photo 5.20). The Seep Wetland flows from the south to the north, passing through a culvert underneath Mandela Drive, after which it becomes a Channelled Valley Bottom wetland (Figure 5.17).

Photo 5.20: View of the Seep Wetland east of the site (@ 5 November 2020)

Based on aerial photographs from 1991 (Figure 5.18), it appears that the size of the wetland increased most likely due to the various impacts.

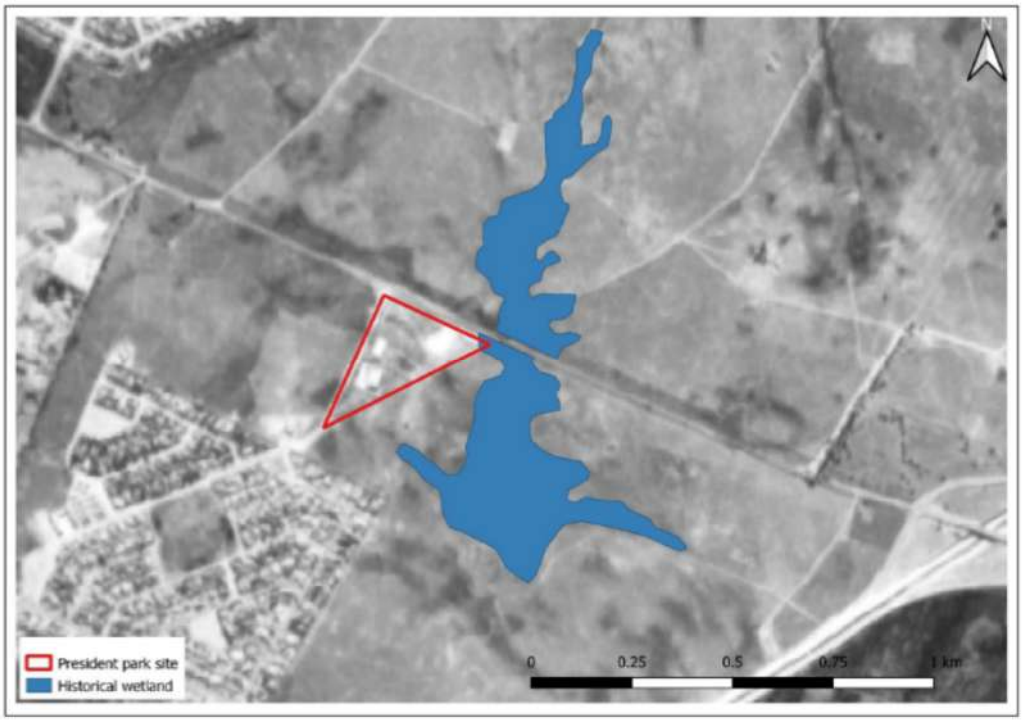


Figure 5.18: Likely historical extent of the wetland east of the site (taken from Venter, 2020b)

Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS)

Table 5.6 provides the Present Ecological State (PES; i.e. a reflection of the change from natural condition) as calculated by Venter (2020b) for the Seep Wetland.

Table 5.6: PES class of the Seep Wetland (taken from Venter, 2020b)

Unit	Hydrology	Geomorphology	Vegetation	Combined
Seep wetland	C (Moderately Modified)	A/B	E (Seriously Modified)	C (Moderately Modified)

As indicated in Table 5.6, the Seep Wetland has a combined PES of Class C (i.e. Moderately Modified). The upper portion of the wetland unit is the most disturbed with disturbances in the downstream portion much lower resulting in the wetland being in a better condition (Venter, 2020b).

According to Venter (2020b), the hydrology of the site is mainly affected by the historical excavation activities in the wetland, the road crossing and the alteration in species composition. Impacts from changed runoff is minimal, since the system originates at this point. In view of these disturbances, the hydrological PES of the site is Class C (Moderately Modified) as indicated in Table 5.6.

The geomorphology of the Seep Wetland is natural to largely natural (PES Class A/B; Table 5.6). Venter (2020b) indicated that the impact of the excavation activities on the topography of the wetland is likely underestimated. The geomorphology of the downstream portion of the wetland is however, intact.

The vegetation in the upper portion of the wetland has a PES of Class E (Seriously Modified; Table 5.6) mainly due to past excavation activities in the wetland unit leading to a change in the species composition and the encroachment of alien invasive species into the wetland. Large portions of the upper wetland unit (i.e. upstream of Mandela Drive) are dominated by *Acacia dealbata* (Green Wattle) or *Pennisetum clandestinum* (kikuyu). The vegetation in the downstream portion of the wetland is in a significantly better condition (i.e. PES Class B or C).

Table 5.7 provides the Ecological Importance and Sensitivity (EIS) of the Seep Wetland as calculated by Venter (2020b).

Table 5.7: Ecological Importance and Sensitivity (EIS) (taken from Venter, 2020b)

Seep Wetland (Figure 5.17)		
Aspect	**Importance**	**Importance**
Ecological Importance & Sensitivity	2.7	High
Hydro-functional Importance	1.4	Moderate
Direct Human Benefit	-	Low

According to Venter (2020b), the upper portion of the Seep Wetland (Figure 5.17) is disturbed and the vegetation is seriously modified, which limits the EIS of this portion of the wetland. As indicated in Section 5.8.3, the Giant Bullfrog was however, noted near the wetland within the artificial ponding area on site (Figure 5.17), which resulted in a High EIS Score (Venter, 2020b) – please refer to Section 5.8.3 for further details regarding the bullfrog.

The downstream portion of the wetland (north of Mandela Drive; Figure 5.17) will contribute more to hydrological functions in the landscape (Venter, 2020b).

According to Venter (2020b), no direct human benefits were observed in the wetland unit and none are expected.

Based on the findings of the wetland study, Venter (2020b) recommended a 28m buffer zone around the Seep Wetland (Figure 5.17).

Sensitivity assessment
The screening report (as per the outcome of the National Screening Tool, 2017; Appendix 1) produced a **Low** sensitivity and **Very High** (aquatic Critical Biodiversity Areas) sensitivity for the Aquatic Biodiversity theme.

As indicated in the preceding sections, no wetlands are present on site as indicated by Venter (2020b). According to the MBSP Freshwater Biodiversity Assessment (2013), the proposed development site does not fall within an Ecological Support Area (ESA): Important subcatchment or Critical Biodiversity Area. It does however, fall within an ESA: Wetland Clusters (Figure 5.15). The Low sensitivity rating for the Aquatic Biodiversity Theme is therefore correct.

A Seep Wetland is however present on the eastern boundary as indicated in Figure 5.17. The Very High sensitivity for the Aquatic Biodiversity theme would therefore be applicable to this offsite wetland area.

5.10 Groundwater

Figure 5.8 provides an indication of the groundwater flow and level on site.

The backfilled borrow pit is highly permeable, resulting in a perched water table ranging between 1.8m and 2.5m below surface. The perched water table is as a result of surface water runoff from the higher lying areas draining towards the site and accumulating in the backfilled area.

Hansmeyer (2010) demarcated the backfilled borrow pit area as Geotechnical Zone 2c (Figure 5.6) and indicated that subsurface drainage will be required (see Section 5.4.2 for further details).

As indicated in Section 5.6.2, Venter (2020b) indicated that no hydric (wetland) soil forms are present on site even though the vegetation in the central, northern and eastern portions of the site does indicate wetter conditions.

5.11 Air quality

The eMalahleni area forms part of a national air pollution hotspot known as the Highveld Priority Area (HPA; Republic of South Africa, 2011). This Priority Area comprises the eastern part of Gauteng and the western part of Mpumalanga and covers an area of 31.106 km^2. This Priority Area was declared in terms of Section 18(1) of the National Environmental Management: Air Quality Act 2004 (Act 39 of 2004) due to poor air quality and associated health risks.

The proposed site is located in the eMalahleni air quality hot spot, which extends to Arnot in the east. This is an area where measured or modelled concentrations exceed, or are predicted to exceed, ambient air quality standards as identified in the Air Quality Management Plan for the Highveld Priority Area.

The air quality of the proposed site is predominately governed by the various industrial and mining activities in and around eMalahleni.

As indicated in Figure 5.3, the proposed site is located within an area that has largely been developed, with vacant land towards the north and east.

The following could impact upon the air quality of the proposed development site:

- Various power stations and opencast mining activities in the eMalahleni area (including the nearby Afrisam Aggregates and Ready-mix quarry/facility).
- Emissions from vehicles utilizing the surrounding road network (e.g. Mandela Drive, Nita Avenue, nearby N4 national road) in the area;
- Dust from vehicles driving/parking on site as well as using nearby gravel roads;
- Smoke emitted from veld fires.

5.12 Noise

The ambient noise of the site and surrounding area is predominantly governed by the following:

- Traffic utilizing Nita Avenue/Mandela Drive/nearby N4 national road;
- Business, recreational, institutional and residential activities taking place in the surrounding area;
- Blasting at the nearby Afrisam Aggregates and Ready-mix quarry/facility.

5.13 Sites of archaeological and cultural interest

5.13.1 Cultural Heritage sensitivity

A Heritage Impact Assessment (HIA) is required in terms of Section 38 of the National Heritage Resources Act (Act 25 of 1999) for any development or activity that will change the character of a site and exceeds 5 000m^2.

Prof. A.C. van Vollenhoven of Archaetnos Culture & Cultural Resource Consultants was appointed to conduct a Heritage Impact Assessment (referred to as van Vollenhoven *et. al*., 2020). A copy of the said report is provided in Appendix 4 and should be consulted with regards to the methodology used.

According to Van Vollenhoven *et. al*. (2020), a large number of heritage reports (SAHRIS database; Archaetnos' database) have been written for the eMalahleni area which either indicate that nothing of heritage significance was found or that the sites have no contextual link to the proposed site.

The following background information is however, provided in order to place the surveyed area in a historical context and to contextualise possible finds that could be unearthed during construction activities.

5.13.1.1 Stone Age

The Stone Age is the period in human history when lithic material was mainly used to produce tools (Coertze & Coertze, 1996). In South Africa, the Stone Age can be divided into three periods. It is however important to note that dates are relative and only provide a broad framework for interpretation.

The division for the Stone Age according to Korsman & Meyer (1999) is as follows:

- Early Stone Age (ESA) 2 million – 150 000 years ago;

- Middle Stone Age (MSA) 150 000 – 30 000 years ago;
- Late Stone Age (LSA) 40 000 years ago – 1850 - A.D.

No Stone Age sites are indicated on a map contained in a historical atlas of this area (Bergh, 1999). The closest known Stone Age occurrence is that of rock art close to the Olifants River to the south of Witbank (Bergh, 1999), i.e. southwest of the proposed site. This however should rather be seen as a lack of research in the area and not as an indication that such features do not occur. Some Middle Stone Age artifacts were identified out of context during previous surveys in the wider geographical area (Archaetnos' database).

Van Vollenhoven *et. al.* (2020) did not record any natural shelters during the survey. It is therefore possible that people did not stay here for extended periods. The close vicinity of water sources and ample grazing would however, have made it a prime spot for hunting and obtaining water. Therefore, one may assume that Stone Age people probably would have moved through the area.

5.13.1.2 Iron Age

The Iron Age is the name given to the period of human history when metal was mainly used to produce metal artefacts (Coertze & Coertze, 1996).

In South Africa it can be divided in two separate phases according to Van der Ryst & Meyer (1999), namely:

- Early Iron Age (EIA) 200 – 1000 A.D.
- Late Iron Age (LIA) 1000 – 1850 A.D.

Huffman (2007) however indicates that a Middle Iron Age should be included. His dates, which now seem to be widely accepted in archaeological circles, are:

- Early Iron Age (EIA) 250 – 900 A.D.
- Middle Iron Age (MIA) 900 – 1300 A.D.
- Late Iron Age (LIA) 1300 – 1840 A.D.

No Iron Age sites are indicated in the historical atlas for the town of eMalahleni (Witbank), but this may only indicate a lack of research. The closest known Iron Age occurrences to the surveyed area are Late Iron Age sites that were identified to the west of Bronkhorstspruit and in the vicinity of Bethal (Bergh, 1999).

The good grazing and access to water in the area would have provided a good environment for Iron Age people, although building material may have been reasonably scarce. One would therefore expect that Iron Age people may have utilized the area. This is the same reason why white settlers later moved into this environment (Van Vollenhoven *et. al*., 2020).

5.13.1.3 Historical Age

The Historical Age started with the first recorded oral histories in the area. It includes the migration of people that were able to read and write.

At the beginning of the 19th century the Phuthing, a South Sotho group, stayed in the vicinity of modern day Kriel and Bethal. During the Difaquane, they fled to the south (Bergh, 1999).

The first white people to move through this area were the party of the traveller, Robert Scoon, who passed through an area to the south of Witbank in 1836 (Bergh, 1999).

Although the Voortrekkers moved across the Vaal River during the 1830's, it seems as if white people only settled here after 1850. By the 1890's, this area was inhabited by many white farmers (Bergh, 1999).

During the Anglo-Boer War (1899-1902), the Highveld areas saw much action between Boer and Brit, e.g. skirmishes on the farms Oshoek (4 December 1901), Trigaardsfontein (10 December 1901), Witbank (11 January 1902) and Nelspan (26 January 1902).

One may therefore expect to find farm buildings, structures and objects from this time period in the area. During past surveys, many graveyards from this time period were identified in the surrounding area (Archaetnos database).

5.13.1.4 Conclusion

Van Vollenhoven *et. al.* (2020) indicated that no sites of cultural heritage significance were identified within the proposed development site and that the development may therefore proceed.

The subterranean presence of archaeological and/or historical sites, features or artefacts is a distinct possibility and may only become known later (i.e. during the construction phase). Operating controls and monitoring should therefore be aimed at the possible unearthing of such features (Van Vollenhoven *et. al.,* 2020). Mitigation measures in this regard are included in the EMPr (Section 9) of this report and must be implemented.

Sensitivity assessment

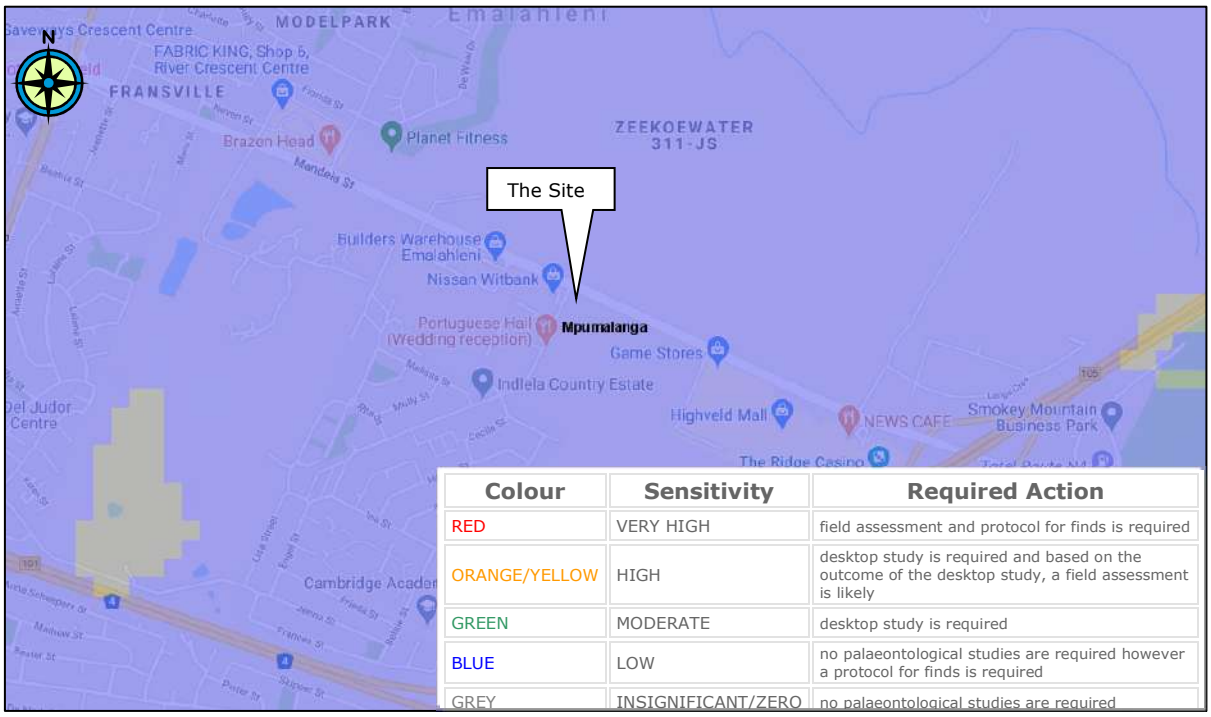
The screening report (as per the outcome of the National Screening Tool, 2017; Appendix 1) produced a Low sensitivity for the Archaeological and Cultural Heritage Theme. This is in line with the findings of Van Vollenhoven *et. al.* (2020) who identified no sites of cultural heritage significance within the proposed development site.

5.13.2 Palaeontological sensitivity

According to the palaeontological map supplied by the South African Heritage Resources Agency (SAHRA, 2014), the palaeontological sensitivity of the proposed site (Figure 5.19) is indicated as follows:

Sensitivity (Figure 5.19)	Geology	Required Action
Low (Blue)	Selons River Formation	No palaeontological study required. However, protocol for finds required.
Explanation of Low Sensitivity (Blue; Figure 5.19)		
BLUE	Low Palaeontological sensitivity/vulnerability. Low possibility that fossils that are described in the literature will be visible to the naked eye or be recognized as fossils by untrained persons. Fossils of for example small domal Stromatolites as well as micro-bacteria are associated with these rock units. Fossils of micro-bacteria are extremely important for our understanding of the development of Life, but are only visible under large magnification. Recording of the fossils will contribute significantly to the present knowledge and understanding of the development of Life in the region. Where geological units are allocated a blue colour of significance, and the geological unit is surrounded by highly significant geological units (red or orange coloured units), a palaeontologist must be appointed to do a desktop survey and to make professional recommendations on the impact of development on significant palaeontological finds that might occur in the unit that is allocated a blue colour. An example of this scenario will be where the scale of mapping on the 1:250 000 scale maps excludes small outcrops of highly significant sedimentary rock units occurring in dolerite sill outcrops. Collection of a representative sample of potential fossiliferous material recommended.	

In order to obtain clarity regarding the above-mentioned action required, an accredited palaeontologist, Dr. Heidi Fourie, was consulted who indicated that a concealed boundary with the Vryheid Formation is present to the west of the site and that a desktop study would be necessary. In view of this, Dr. Heidi Fourie (Heidi Fourie Consulting) was appointed to conduct a Desktop Palaeontological Impact Assessment (referred to as Fourie, 2020). A copy of the said report is provided in Appendix 5 and should be consulted with regards to the methodology used.



Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required

Figure 5.19: Requirement for palaeontological study (taken from SAHRA, 2020)

5.13.2.1 Outline of the geology

The palaeontological sensitivity of a site is closely related to the underlying geology, since fossils mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature.

According to the 1: 250 000 Geological Series (number 2528 Pretoria), the site is underlain by volcanic rocks of the Selonsrivier Formation, Rooiberg Group, Transvaal Supergroup (Figure 5.5a). The Selons River Formation has either a sandstone or a quartzite at its base and mainly consists of red rhyolite. No fossils have been recorded for the Selons River Formation (Fourie, 2020).

The potential impact of the development on the fossil heritage is indicated as LOW for the Selons River Formation, Rooiberg Group, Transvaal Supergroup. However, there is a concealed boundary with the Vryheid Formation, Ecca Group, Karoo Supergroup, to the west of the site (Fourie, 2020).

The Vryheid Formation, Ecca Group, Karoo Supergroup consists essentially of sandstone, shale and subordinate coal beds. This formation contains the largest coal reserves in South Africa.

Ecca rocks are stable and lend themselves well to developments. These rocks are only unstable in or directly above mining activities (Snyman, 1996). Fourie

(2020) indicated that the proposed development site is partly situated on the flat-lying Vryheid Formation.

5.13.2.2 Outline of palaeontology

The Vryheid Formation, Ecca Group, Karoo Supergroup is renowned for its fossil wealth. The Ecca Group may contain fossils of diverse non-marine trace, *Glossopteris* flora, mesosaurid reptiles, palaeoniscid fish, marine invertebrates, insects, and crustaceans (Johnson, 2009).

Glossopteris trees rapidly colonised the large deltas along the northern margin of the Karoo Sea. Dead vegetation accumulated faster than it could decay, and thick accumulations of peat formed, which were ultimately converted to coal. It is only in the northern part of the Karoo Basin that the glossopterids and cordaitales, ferns, clubmosses and horsetails thrived (McCarthy and Rubidge, 2005).

The *Glossopteris* flora is thought to have been the major contributor to the coal beds of the Ecca. These are found in Karoo-age rocks across Africa, South America, Antarctica, Australia and India. This was one of the early clues to the theory of a former unified Gondwana landmass (Norman and Whitfield, 2006).

Table 5.8a provides an indication of the occurrence of fossils in the Selons River and Vryheid Formations.

Table 5.8a: Occurrence of fossils in the Selons River and Vryheid Formations (taken from Fourie, 2020).

Selonsrivier Formation in the development area	
No fossils recorded. Fossils within minor sedimentary units unlikely because of fluvial depositional setting and subsequent metamorphism.	Possible evidence for a catastrophic event at the base of Rooiberg Group (basin floor collapse, slumping, volcanism). Selons River and Kwaggasnek units previously included within upper Pretoria Group by some geologists.
Vryheid Formation on surrounding areas	
Rich fossil plant assemblages of the Permian Glossopteris Flora (lycopods, rare ferns and horsetails, abundant glossopterids, cordaitaleans, conifers, ginkgoaleans), rare fossil wood, diverse palynomorphs. Abundant, low diversity trace fossils, rare insects, possible conchostracans, non-marine bivalves, fish scales. (Please refer to Appendix 5 for further information in this regard).	Globally important fossil floras from Middle Permian Gondwana. Seriously under-collected in recent years, despite ongoing mining for coal.

Fossils in South Africa mainly occur in rocks of sedimentary nature and not in rocks from igneous or metamorphic nature. Therefore, if there is the presence of Karoo Supergroup strata the palaeontological sensitivity can generally be LOW to VERY HIGH as indicated in Table 5.8b.

Table 5.8b: Criteria used (Fossil Heritage Layer Browser/SAHRA) (taken from Fourie, 2020)

Geology	**Sensitivity/vulnerability**	**Recommended Action**
Vryheid Formation (Pv) (Pe)	Very High	Field assessment and protocol for finds is required.
Selons River Formation (Vs)	Low	Desktop study

In terms of the proposed development site, the palaeontological sensitivity is LOW for the Selons River Formation as fossils have not been recorded for this formation (Fourie, 2020). The impact is potentially VERY HIGH for the surrounding Vryheid Formation (Fourie, 2020).

5.13.2.3 Conclusion and recommendation

Although the proposed development site is underlain by the Selons River Formation, Fourie (2020) indicated that it was necessary to do a Desktop Palaeontological Impact Assessment as the proposed development site is surrounded by an area with a Very High palaeontological sensitivity.

Based on the findings of the desktop study, Fourie (2020) raised no objection to the proposed development and indicated that the development may go ahead.

Special care must however, be taken during the construction phase (e.g. digging, drilling, blasting, excavating of foundations, removal of overburden, etc.). A protocol for finds and management plan are provided in Appendix 2 of Appendix 5. If any palaeontological material is exposed during digging, excavating, drilling or blasting SAHRA must be notified. All construction activities must be stopped, a 30 m no-go barrier constructed and a palaeontologist should be called in to determine proper mitigation measures (Fourie, 2020).

5.14 Sensitive landscapes

Venter (2020) identified no wetlands on site as indicated in Section 5.9.4. No sensitive landscapes (wetlands/seepage areas, etc.) are thus present on site.

5.15 Visual aspects

The site is located within the eMalahleni urban area (Figure 5.4) and is surrounded by various land uses, e.g. residential (Del Judor x4), businesses, etc.

Mandela Drive is located along the northern boundary of the site (Photo 5.8; Figure 5.3) and Nita Avenue along the western boundary (Photo 5.8; Figure 5.3). A Nissan motor dealership, Highveld View Estate and Indlela Lodge are present west of Nita Avenue (Figure 5.3; Photo 5.9).

The Portuguese Club and Casa Portuguesa Restaurant are located on the southern boundary of the site (Figure 5.3).

The properties north and east of the site are currently vacant (Figure 5.4) and owned by the eMalahleni Local Municipality. The Highveld Mall is located further towards the east (Figure 5.4).

The site is highly visible from Mandela Drive, Nita Avenue and all the adjacent properties (e.g. Nissan Dealership, Highveld View Estate, Casa Portuguesa restaurant, open veld, etc.) and to an extent from the Highveld Mall.

5.16 Traffic

A traffic impact assessment was undertaken by J. van Rooyen of EDL Engineers (Pty) Ltd. (hereafter referred to as Van Rooyen, 2020). A copy of the report is provided in Appendix 6. This report should be consulted for methodology used.

5.16.1 Proposed development

As already indicated, the proposed development site is located on the corner of Nita Avenue and Mandela Drive (Figure 5.18). The said site is located west of the N4 national road and south of Mandela Drive.

The proposed development site is approximately 30 454m^2 in size. A retail (shopping) centre with a proposed total GLA of approximately 12 000m^2 is proposed for the said site.

5.16.2 Trip generation

According to Van Rooyen (2020), the standard trip rate for Retail (shopping centre) is:

- 3.40 vph/100m^2 GLA – Friday Afternoon (PM) peak hour;
- 4.50 vph/100m^2 GLA – Saturday Morning (AM) peak hour.

Using the recommended parameters, Table 5.9 provides a summary of the estimated total development traffic for the proposed development. Figures 3, 4, 5 and 6 (Appendix 6) provide the estimated trip generation and distribution for the proposed development.

Table 5.9: Summary of the Estimated Total development traffic (taken from Van Rooyen, 2020)

Land use	Peak Hour	Trip Rate	Adj. Factors	Reduction Factors	Split %	TRIPS		
						In	Out	Total
Retail (12 000 m^2 GLA)	Friday PM	3.4 vph/100m^2 GLA	2.3548	15%	50/50	408	408	816
	Saturday AM	4.5 vph/100m^2 GLA	2.3548	15%	50/50	541	541	1082
	Total Trips			**Friday PM**		**408**	**408**	**816**
				Saturday AM		**541**	**541**	**1082**

As indicated in Table 5.9, it is estimated that the proposed retail development will generate (as a worst case) a total of 816 vph (total 'In' and 'Out') during the Friday Afternoon (PM) and 1082 vph (total 'In' and 'Out') during the Saturday Morning (AM) peak hours.

5.16.3 Proposed site accesses

The proposed site will be accessed from Mandela Drive (left-in only) and two full access points from Nita Avenue as indicated in Figure 5.20.

According to Van Rooyen (2020), the proposed access roads were approved by the eMalahleni Local Municipality (i.e. in terms of the previous Traffic Impact Assessment done by WSP in March 2010).

Further details with regards to these accesses are provided in Appendix 6.

5.16.4 Surrounding Road Network

N4 Highway Ramps

The on-and-off-ramps from the N4 national road function as accesses to and from a Principal Arterial (Class 1 road). These roads are surfaced single carriageway roads (with one (1) or two (2) lanes) with signalised intersections (i.e. with Mandela Drive).

According to Van Rooyen (2020), traffic volumes of between 50vph and 850vph per direction are experienced during the Friday Afternoon (PM) and Saturday Morning (AM) peak hours near the site, depending on the specific ramp.

Mandela Drive

Mandela Drive functions as a Minor Arterial (Class 3) in the vicinity of the proposed development site. The road is a surfaced dual carriageway with a large median and two (2) lanes in each direction.

Mandela Drive has signalised intersections with the N4 on-and-off ramps and Langa Cres/Highveld Mall Access. An 'All-way' Stop is present at the T-junction with Nita Avenue.

Mandela Drive is the main link between the central business district (CBD) of eMalahleni, the Witbank Dam and the residential areas located south of the N4 (e.g. Reyno Ridge, Ben Fleur and Bankenveld).

According to Van Rooyen (2020), Mandela Drive carries traffic volumes ranging between 650 and 1300 vph per direction during the Friday Afternoon (PM) and Saturday Morning (AM) peak periods.

Nita Avenue

Nita Avenue is Collector Street (Class 4) that provides access from Mandela Drive to the residential area, Del Judor x4. The road is a surface single carriageway road with no median and one (1) lane in each direction. An 'All-way' Stop is present at the T-junction with Mandela Drive.

According to Van Rooyen (2020), Nita Avenue carries traffic volumes ranging between 110 and 180 vehicles per hour (vph) per direction, during the Friday Afternoon (PM) and Saturday Morning (AM) peak periods (i.e. in the vicinity of the proposed development site).

Other intersections along Mandela Drive

The following intersections along Mandela Drive were also taken into account namely: Mandela Drive/Bethal Street and Mandela Drive/Langa Crescent. Further information regarding these intersections is provided in Appendix 6.

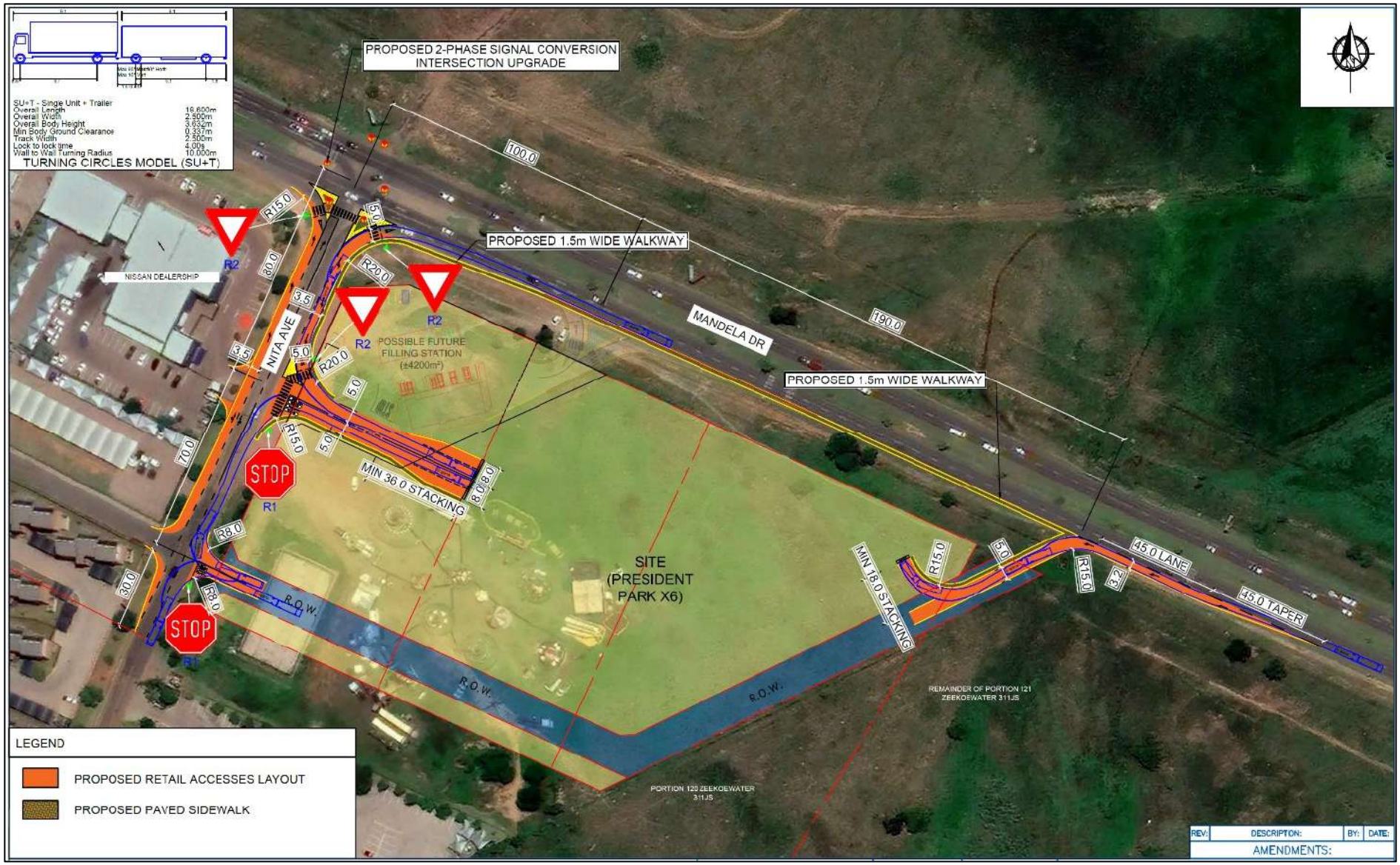


Figure 5.20: Proposed access layout and intersection upgrades (taken from Van Rooyen, 2020)

5.16.5 Existing traffic flows

Traffic counts were carried out during the Friday Afternoon (PM) and Saturday Morning (AM) commuter peak periods in early October 2020 at the following intersections:

- N4 Westbound Ramps & Mandela Drive;
- N4 Eastbound Ramps & Mandela Drive;
- Mandela Drive & Nita Avenue;
- Mandela Drive & Bethal Street;
- Mandela Drive & Langa Crescent/Highveld Mall Access.

The existing Friday Afternoon (PM) and Saturday Morning (AM) peak hour traffic volumes at the above-mentioned intersections are summarised in Figure 2 of Appendix 6.

According to Van Rooyen (2020), the traffic counts were undertaken during Level 1 of the Covid-19 Lockdown and no adjustments to the traffic count volumes were deemed necessary as the peak hour traffic volumes had already returned to normal levels.

5.16.6 Traffic impact and capacity analyses

Van Rooyen (2020) conducted capacity analyses (using SIDRA9, a well-known traffic engineering software package) in order to determine the expected traffic impact of the proposed development at the following existing intersections:

- N4 Westbound Ramps & Mandela Drive;
- N4 Eastbound Ramps & Mandela Drive;
- Mandela Drive & Nita Avenue;
- Mandela Drive & Bethal Street;
- Mandela Drive & Langa Crescent/Highveld Mall Access.

For the above-mentioned intersections, the following scenarios were analysed:

- Existing 2020 Friday Afternoon (PM) and Saturday Morning (AM) peak hour without development traffic (as per Figure 2 of Appendix 6);
- Existing 2020 Friday Afternoon (PM) and Saturday Morning (AM) peak hour with development traffic (as per Figure 2 of Appendix 6);
- Existing 2025 Friday Afternoon (PM) and Saturday Morning (AM) peak hour without development traffic (as per Figure 2 of Appendix 6);
- Existing 2025 Friday Afternoon (PM) and Saturday Morning (AM) peak hour with development traffic (as per Figure 2 of Appendix 6);

A maximum average growth rate of 3%/Annum was adopted and applied to the existing 2020 peak hour traffic counts. According to Van Rooyen (2020), the area is slowly densifying and the growth (although lower than in previous years due to slow/negative economic growth) is expected to be positive going forward.

Section 6 of Appendix 6 provides further details with regards to the expected trip distributions.

Tables 5.10 to 5.15 provide a summary of the results with regards to the Sidra analyses (worst approach only).

Table 5.10: N4 Westbound Ramps & Mandela Drive – results of SIDRA Analyses (worst approach only) (taken from Van Rooyen, 2020)

Intersection		1. N4 Westbound Ramps & Mandela Dr			
Scenario		Existing 2020	Exist 2020 + Dev	Future 2025 (with planned upgrades)	Future 2025 + Dev (with planned upgrades)
Level of Service	Friday Afternoon PM Peak Hour	F	F	C	D
	Saturday Morning AM Peak Hour	D	D	B	C
Average Delays	Friday Afternoon PM Peak Hour	113.3	169.5	33.0	45.3
	Saturday Morning AM Peak Hour	46.8	53.7	18.0	21.7
Remarks	The Intersection currently operates acceptably, with the development traffic added – no upgrades are required.				

Table 5.11: N4 Eastbound Ramps & Mandela Drive– results of SIDRA Analyses (worst approach only) (taken from Van Rooyen, 2020)

Intersection		2. N4 Eastbound Ramps & Mandela Dr			
Scenario		Existing 2020	Exist 2020 + Dev	Future 2025 (with planned upgrades)	Future 2025 + Dev (with planned upgrades)
Level of Service	Friday Afternoon PM Peak Hour	C	C	C	C
	Saturday Morning AM Peak Hour	B	B	B	B
Average Delays	Friday Afternoon PM Peak Hour	25.9	27.7	20.3	21.5
	Saturday Morning AM Peak Hour	13.6	15.3	13.3	13.9
Remarks	The Intersection currently operates acceptably, with the development traffic added – no upgrades are required.				

Table 5.12: Mandela Drive & Nita Avenue – results of SIDRA Analyses (worst approach only) (taken from Van Rooyen, 2020)

Intersection		3. Mandela Dr & Nita Ave			
Scenario		Existing 2020	Exist 2020 + Dev	Future 2025	Future 2025 + Dev
Level of Service	Friday Afternoon PM Peak Hour	D	F	F	F
	Saturday Morning AM Peak Hour	B	F	B	F
Average Delays	Friday Afternoon PM Peak Hour	27.6	268.6	180.2	465.2
	Saturday Morning AM Peak Hour	11.0	145.1	13.2	297.1
Remarks	The Intersection currently operates unacceptably, with the development traffic added – upgrades are required.				

Table 5.13: Mandela Drive & Nita Avenue: signal conversion – results of SIDRA Analyses (worst approach only) (taken from Van Rooyen, 2020)

Intersection		3. Mandela Dr & Nita Ave – Signal Conversion		
Scenario		Exist 2020 + Dev	Future 2025	Future 2025 + Dev
Level of Service	Friday Afternoon PM Peak Hour	C	C	C
	Saturday Morning AM Peak Hour	C	B	D
Average Delays	Friday Afternoon PM Peak Hour	23.0	22.2	34.2
	Saturday Morning AM Peak Hour	28.2	17.0	46.9
Remarks	Conversion from 'All-way' Stop to 'Two phase' signalised intersection.			

Table 5.14: Mandela Drive & Bethal Street – results of SIDRA Analyses (worst approach only) (taken from Van Rooyen, 2020)

Intersection		4. Mandela Dr & Bethal St			
Scenario		Existing 2020	Exist 2020 + Dev	Future 2025	Future 2025 + Dev
Level of Service	Friday Afternoon PM Peak Hour	C	C	C	D
	Saturday Morning AM Peak Hour	B	B	B	C
Average Delays	Friday Afternoon PM Peak Hour	23.4	29.6	31.0	40.8
	Saturday Morning AM Peak Hour	17.1	18.5	17.6	21.3
Remarks	The Intersection currently operates acceptably, with the development traffic added – no upgrades are required.				

Table 5.15: Mandela Drive and Langa Crescent – results of SIDRA Analyses (worst approach only) (taken from Van Rooyen, 2020)

Intersection		5. Mandela Dr & Langa Cres			
Scenario		Existing 2020	Exist 2020 + Dev	Future 2025	Future 2025 + Dev
Level of Service	Friday Afternoon PM Peak Hour	C	C	D	D
	Saturday Morning AM Peak Hour	C	C	C	C
Average Delays	Friday Afternoon PM Peak Hour	29.0	32.8	38.7	42.0
	Saturday Morning AM Peak Hour	22.1	23.0	23.1	25.7
Remarks	The Intersection currently operates acceptably, with the development traffic added – no upgrades are required.				

Table 5.16 provides a summary of the SIDRA Analyses conducted for the various identified intersections.

Table 5.16: Summary of the SIDRA Analyses conducted for the various identified intersections (taken from Van Rooyen, 2020)

INTERSECTION	REMARKS	
N4 Westbound Ramp & Mandela Drive – with planned upgrades as set out for SANRAL by L&S Consulting (Annexure C of Appendix 6)	The Intersection currently operates acceptably, with the development traffic added.	No upgrades required.
N4 Eastbound Ramps & Mandela Drive – with planned upgrades as set out for SANRAL by L&S Consulting (Annexure C of Appendix 6)	The Intersection currently operates acceptably, with the development traffic added.	No upgrades required.
Mandela Drive & Nita Avenue	**The Intersection currently operates unacceptably, with the development traffic added.**	**Upgrades are required.**
Mandela Drive & Bethal Street	The Intersection currently operates acceptably, with the development traffic added.	No upgrades required.
Mandela Drive and Langa Crescent	The Intersection currently operates acceptably, with the development traffic added.	No upgrades required.

According to Van Rooyen (2020), the planned upgrades for both the N4 on-and-off ramps (as proposed by L&S Consulting) entail the following:

Eastbound Ramps:

- Widening of the off-ramp on the eastern side to accommodate an additional short lane for the off-ramp and adding an additional right-turn lane by converting the existing left-turn lane to a right-turn lane.
- Construction of a kerbed island and left-slip lane for the off-ramp.
- For the eastern approach (Mandela Drive), the existing left-turn lane will be converted to a left-through lane. The western approach will be widened on the northern side to accommodate the corresponding short through-lane.

Westbound Ramps:

- Widening of Mandela Drive on the northern side to accommodate an additional short through-lane and the corresponding short exit lane.
- Conversion of the existing through-lane to a through-right lane.
- Widening of the on-ramp on the eastern side to accommodate an additional short lane.

Van Rooyen (2020) indicated that the N4/Mandela Drive intersections will operate at acceptable levels with the additional development traffic if the above-mentioned proposed upgrades to the on-and-off ramps are implemented.

Based on the findings of the Sidra Intersection Capacity Analyses, the following upgrading is proposed for the intersection of Mandela Drive and Nita Avenue (Table 5.16; Figure 5.20):

- Conversion of the 'All-way' stop to a 'two-phase' signalised intersection;
- Addition of a left-turn lane on western side of Nita Avenue;
- Addition of a slip exit lane on the eastern side of Nita Avenue.

The above-mentioned will be the responsibility of the developer.

5.16.7 Public Transport

Van Rooyen (2020) recommended that the following be provided with regards to non-motorised and public transport:

- A pedestrian walkway (1.5m wide) along the northern and western boundaries of the site;
- An additional public transport facility formal pick-up/drop-off/waiting area to accommodate 12 minibus taxis within the parking area of the proposed development.

5.16.8 Conclusion

Van Rooyen (2020) concluded that the proposed development is supported from a traffic engineering perspective, provided that the necessary intersection upgrades and site accesses are implemented as indicated in the preceding sections.

5.17 Sense of place

The proposed development will be located within an established urban area and within the urban edge of eMalahleni (Figure 5.21). In terms of land use, the surrounding area is utilized for business, institutional, residential and recreational activities.

The proposed retail development would be highly visible from the adjacent Nita Avenue and the busy Mandela Drive. According to the eMalahleni Spatial Development Framework (SDF; 2015), Mandela Drive was identified as one of the activity spines/corridors (Figure 5.21) where non-residential uses would be allowed in order to optimally utilize the visual exposure from the high traffic volumes along this road.

The proposed retail development would be highly visible and easily accessible from Mandela Drive and therefore fits into the development plans of the eMalahleni Local Municipality. The proposed development should therefore not impact on the sense of place of the area.

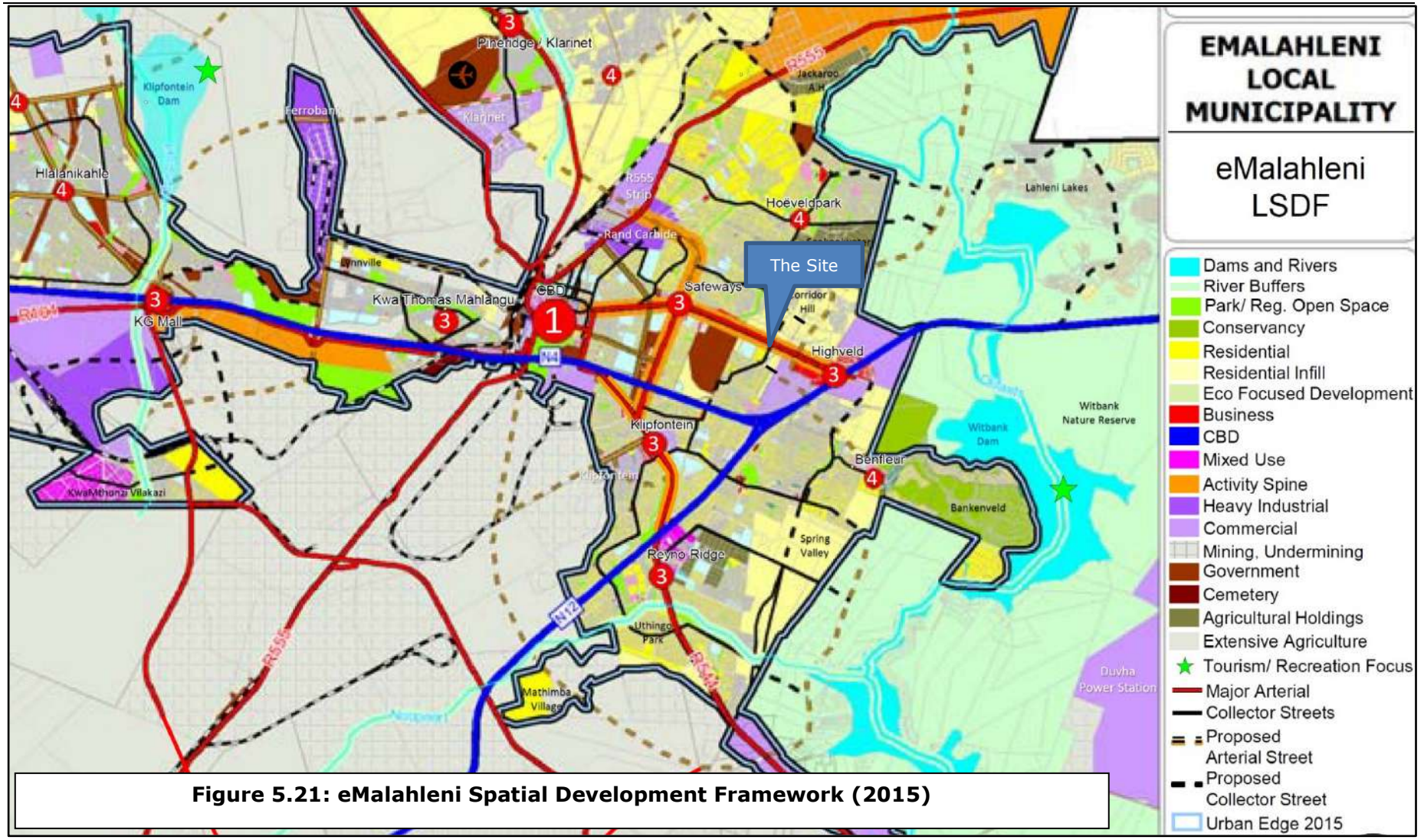


Figure 5.21: eMalahleni Spatial Development Framework (2015)

5.18 Concluding Remarks

As already indicated, material was excavated from site (between 1985 and 1990) for the construction of Mandela Drive and other streets in eMalahleni. The borrow pit was subsequently backfilled (mainly with building rubble and sand), levelled and grassed.

As a result of past disturbances, the vegetation of the site is highly modified/transformed with low species diversity. It no longer resembles the Rand Highveld Grassland vegetation type (Venter, 2020a).

Venter (2020b) indicated that most of the site (i.e. the levelled area) falls within the Technosol group and more particularly the Johannesburg soil form (i.e. soil profiles covered by concrete structures, cement and waste materials including building gravel). This soil form is not suitable for agricultural purposes.

Hansmeyer (2010) indicated from a geotechnical point of view that the said site can be development subject to the implementation of the recommendations.

According to Venter (2020b), no hydric (wetland) soil forms are present on site even though the vegetation in the central, northern and eastern portions of the site does indicate wetter conditions. No wetlands and sensitive landscapes (wetlands/seepage areas, etc.) are thus present on site.

A Seep Wetland is however present on the eastern boundary. Based on the findings of the wetland study, Venter (2020b) recommended a 28m buffer zone around the Seep Wetland.

Van Vollenhoven (2020) identified no sites of cultural heritage significance within the proposed site. From a palaeontological point of view, Fourie (2020) raised no objection to the proposed development and indicated that the development may go ahead with caution.

Van Rooyen (2020) indicated that the proposed development is supported from a traffic engineering perspective, provided that the necessary intersection upgrades and site accesses are implemented.

The proposed retail development would be highly visible and easily accessible from Mandela Drive and therefore fits into the development plans of the eMalahleni Local Municipality. The proposed development should therefore not impact on the sense of place of the area.

SECTION 6: DESCRIPTION OF THE PUBLIC PARTICIPATION PROCESS

The public participation process is defined in the Public Participation (PP) Guideline (2017) as *"a process by which potential interested and affected parties are given opportunity to comment on, or raise issues relevant to, the application.*"

According to the PP Guideline (2017), some characteristics of a comprehensive PP process include providing role-players with clear, accurate and understandable information about the activity, allowing them to voice their support, concerns and questions regarding the project and encouraging transparency and accountability in decision-making.

Interested and Affected Parties/role players also have a responsibility towards ensuring a successful public participation process and must ensure that:

a. *comments are submitted within the specified timeframes or any extension of a timeframe agreed to by the applicant or the EAP;*
b. *comments are submitted directly to the EAP; and*
c. *any direct business, financial, personal or other interest which the I&AP may have in the approval or refusal of the application is disclosed to the EAP.*

Covid-19 lockdown

The National Department of Environment, Forestry and Fisheries published the "*Directions Regarding Measures to Address, Prevent and Combat the Spread of COVID-19 Relating to National Environmental Management Permits and Licences"* on 5 June 2020 (hereafter referred to as the Directions). These Directions informed the process to be followed with regards to existing and new applications during the lockdown period.

According to these directions, a Public Participation Plan had to be submitted and agreed to by the Department before continuing with the Public Participation Process:

> *New applications and pending applications are limited to the following:*
> *- where a public participation process (PPP) as contemplated in Chapter 6 of the Environmental Impact Assessment Regulations, is required, subject to an agreed public participation plan (as required in Annexure 3); and/or*
> *- where no PPP is required.*

In view of the above-mentioned, a Public Participation Plan (PPP – see Appendix 7) was submitted to DARDLEA for approval (submitted electronically to Ms. D. Tswai on Thursday, 9 July 2020) before commencing with the public participation process in July 2020. Ms. Tswai was telephonically contacted on Monday, 13 July 2020, to discuss the submitted PPP and to obtain verbal approval thereof.

The Public Participation Process was designed to satisfy the requirements of Chapter 6 and Appendix 1 of the EIA Regulations, 2014 (as amended), the PP Guideline, 2017 as well as the Covid-19 Directions of 5 June 2020.

This section of the report therefore provides an overview of the public participation process followed to date and represents the Comments and

Response Report as required in terms of Section 44 of the EIA Regulations, 2014 (as amended) and the PP Guideline, 2017.

The following information is provided in this section of the report:

- Details regarding the advertising of the project (Section 6.1);
- Comment received in response to advertising and the distribution of the Background Information Document (Sections 6.2 to 6.4);
- A list of registered Interested and Affected Parties, stakeholders and government departments (Section 6.3);
- A map indicating directly affected and adjacent landowners (Figure 6.2);
- A summary of the comments received from I&APs and a response from the EAP (Table 6.4).
- Supporting documentation e.g. copies of e-mails, notices, Background Information Document (BID), comment sheets, etc. (Appendices 8 to 11).

6.1 Advertising of the project

6.1.1 Press advertising

A block advert (150mm x 95mm), according to the Environmental Impact Assessment Regulations, 2014 (as amended), was placed in the local newspaper, Witbank News, on Friday, 24 July 2020. A copy of the advert is provided in Appendix 8.

The Witbank News is distributed in eMalahleni, Middelburg, Ga-Nala, Ogies, Clewer, Blinkpan, Balmoral and surrounding areas with approximately 27 000 copies sold every Thursday.

6.1.2 On-site advertising

Notices according to the Environmental Impact Assessment Regulations, 2014 (as amended), were displayed at the following locations:

- On the corner of Nita Avenue and Mandela Drive (A1 size; Figure 6.1 – Photo 6.1);
- On the eastern boundary of the site adjacent to Nita Avenue (A3 size; Figure 6.1 - Photo 6.2);
- On site on the basketball court fence (A3 size; Figure 6.1 – Photo 6.3);
- On the notice board at Casa Portuguesa Restaurant, Portuguese Club (A3 size; Photo 6.4);
- On the fence at the Witbank Public Library (A3 size; Photo 6.5);
- On the notice board at Fourway's Café, Del Judor X4 (A3 size; Photo 6.6).

A copy of the notice was also loaded onto the company website: http://adienvironmental.co.za.

A copy of the notice is provided in Appendix 8.

It should be noted that the A1 notice was 594 mm x 841 mm and the A3 notices 416mm x 295mm (A3) in size.

Figure 6.1: Aerial view of notice placements

Photo 6.5: A view of the notice displayed at the Witbank Public Library

Photo 6.6: A view of the notice displayed at Fourway's Café, Del Judor X4

6.1.3 Informing I&APs via the internet

A copy of the following documentation was loaded onto the AdiEnvironmental cc. website (http://adienvironmental.co.za):

- Copy of the notice;
- Background Information Document (BID; Appendix 9).

This information was available on the website for the duration of the basic assessment phase.

A copy of the webpage printouts is provided in Appendix 8.

In addition to the above, the notice was also placed (23 July 2020) on the Ward 34 Facebook Page (Appendix 8).

6.1.4 Feedback from the advertising process

Only one person (Ms. D. Wessels) registered as an Interested and Affected Party (e-mail dated: 14 August 2020; Appendix 8) in terms of the advertising of the project.

Ms. Wessels represents the company Leads2Business and registered for possible future business opportunities.

There was thus no need for a public meeting.

6.2 Directly affected landowner/user

Meronox (Pty) Ltd

The proposed development site is located on Erven 20, 21 and 22 of President Park X6 (Figure 6.1), which is owned by Meronox (Pty) Ltd. (i.e. the applicant for the proposed development) – see the Windeed Property Report provided in Appendix B of Appendix 1.

No outside party will thus be directly impacted by the proposed project.

6.3 Identified local authorities/government departments and stakeholders

Table 6.1 provides an indication to which local authorities/government departments and stakeholders Background Information Documents (BIDs; Appendix 9) were forwarded in order to inform them of the proposed project and to obtain their issues of concern.

Table 6.1: Identified local authorities/government departments and stakeholders who received BIDs

AUTHORITY/ STAKEHOLDER	CONTACT PERSON	CORRESPONDENCE SENT	COMMENTS
Government Departments			
Department of Agriculture, Forestry and Fisheries (DAFF)	F. Mashabela	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) - Directorate: Land Use and Soil Management – Ermelo	J. Venter	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
Department of Co-operative Governance and Traditional Affairs (COGTA)	M. Loock	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
Department of Mineral Resources	S. Mathavela	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	T. Mkhonto	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
Department of Water and Sanitation (DWS)	T. Ndlhovu	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
Stakeholders			
Eskom Distribution (Land & Rights)	T. Ludere	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
Eskom Transmission	L. Motsisi	E-mail (dated: 23 July 2020; Appendix 10) with	None

AUTHORITY/ STAKEHOLDER	CONTACT PERSON	CORRESPONDENCE SENT	COMMENTS
		BID forwarded.	
Mpumalanga Tourism and Parks Agency (MTPA) – Land Advisory Unit	K. Narasoo P. Nkosi	E-mail (dated: 23 July 2020 & 13 August 2020; Appendix 10) with BID forwarded.	None
South African Civil Aviation Authority (SACAA)	K. Mthapo	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
South African Heritage Resources Agency (SAHRA)	N. Khumalo (SAHRIS)	Loaded BID on SAHRA website on 20 July 2020 (Appendix 10).	Yes. See Section 6.3.1 and Table 6.4.
South African National Roads Agency (SANRAL)	V. Bota K. Schmid I. van der Linde	E-mail (dated: 23 July 2020; Appendix 10 with BID forwarded.	Yes. See Section 6.3.2 and Table 6.4.
Trans African Concessions (TRAC)	C. Davis R. Nkosi	E-mail (dated: 23 July 2020; Appendix 10 with BID forwarded.	Yes. See Section 6.3.2 and Table 6.4.
Telkom	J. Smit	E-mail (dated: 23 July 2020; Appendix 10 with BID forwarded.	None
Local Authorities			
Nkangala District Municipality	S. Links A. Thwala	E-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	None
eMalahleni Local Municipality	E. Nkabinde O. Riba	E-mails (dated: 23 July 2020 & 9 September 2020; Appendix 10) with BID forwarded.	None
eMalahleni Local Municipality	Councillor L. Steyn (Ward 34)	Telephonic discussion and e-mail (dated: 23 July 2020; Appendix 10) with BID forwarded.	Yes. See Section 6.3.3

6.3.1 South African Heritage Resources Agency (SAHRA)

A letter (dated: 26 August 2020; Ref: 15280; Appendix 10) was received from the South African Heritage Resources Agency (SAHRA) indicating the following:

In order to meet the requirements of SAHRA for commenting in terms of section 38(8) of the National Heritage Resources Act, no. 25 of 1999 (NHRA), a Heritage Impact Assessment (HIA) by Archaetnos Archaeological Consulting cc and a Palaeontological Impact Assessment (PIA) by Dr H Fourie have been submitted to SAHRA for commenting.

Van Vollenhoven, A.C. May 2020. A Report on a Heritage Impact Assessment for the Proposed Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, Emalahleni, Mpumalanga Province.

The author undertook a field assessment of the proposed retail centre development area, and the author did not identify any surface heritage resources. The development area is already disturbed with buildings already on the property. The author recommends chance finds procedure in the unlikely event that heritage resources are identified during construction.

Fourie, H. May 2020. The Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank) eMalahleni Local Municipality

within the Mpumalanga Province Farm: Zeekoewater 311-JS. Palaeontological Impact Assessment: Desktop Study.

The proposed development area is underlain by the Selons River Formation (it has been subdivided and renamed the Kwaggasnek and Schrikkloof Formations), Rooiberg Group, Transvaal Supergroup. No fossils have been identified in this formation, and this palaeontological zine if of low significance. But there is a concealed boundary with the Vryheid Formation, Ecca Group, Karoo Supergroup to the west, which is of Very High Palaeontological Significance. The author recommends the following chance finds procedures as per the palaeontological map sensitivity policy.

The author recommends the Fossil Chance Finds Protocol in the EMPr to be implemented by the ECO.
1. Mitigation may be needed (Appendix 2) if fossils are found.
2. No consultation with parties was necessary. The Environmental Control Officer must familiarise him- or herself with the formation present and its fossils.
3. The development may go ahead.
4. The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction activities. For a chance find, the protocol is to immediately cease all construction activities, construct a 30 m no-go barrier, and contact SAHRA for further investigation. It is recommended that the EMPr be updated to include the involvement of a palaeontologist (pre-construction training of ECO).

Interim Comment
The South African Heritage Resources Agency (SAHRA) Archaeology, Palaeontology and Meteorites (APM) Unit cannot comment until the draft Basic Assessment report is submitted to this case.

Response from AdiEnvironmental
See Table 6.4.

6.3.2 South African National Roads Agency and Trans African Concessions

The N4 national road, which falls under the jurisdiction of the South African National Roads Agency (SANRAL), is located 1.3km south east of the site (Figure 6.2). Trans African Concessions (TRAC) manages the N4 Toll Route.

An email (dated: 23 July 2020; Appendix 10) was received from C. Davis from TRAC indicating the following:

Although the N4 does not border on the proposed development, the development will probably have an impact on the traffic on the N4.
We would like to register as interested and affected party.
We will also require a TIA to be done to indicate the effect on Level of Services at the N4 terminal intersections with Mandela Drive for base year and 5 years from now.
A recent TIA was conducted by consultants for Highveld Mall. Perhaps you could find out from Jandre if you could use the TIA to be amended with your development trips.

Subsequently, a number of emails were exchanged between AdiEnvironmental and SANRAL officials (I. van der Linde (dated: 27 July 2020); K. Schmid

(dated: 28 July 2020; Appendix 10) with regards to the required Traffic Impact Assessment.

Response from AdiEnvironmental
See Table 6.4.

6.3.3 Councillor Ward 34 – L. Steyn

Can you please inform me to whom you have sent the email - it is very difficult to monitor and track Public participation if you forward the stuff left right and centre to the residents in the neighbourhood or neighbourhood watch - what is the use of including me then.

I am not very happy with the way you work - but I presume you have enough office staff to monitor emails, enquiries, inputs and complaints.

Response from AdiEnvironmental
See Table 6.4.

6.4 Adjacent landowners/users and other Interested and Affected Parties

Table 6.2 and Figure 6.2 provide an indication of the adjacent landowners who were consulted as part of the public participation process.

As indicated in Figure 6.2, the proposed site is located on the corner of Nita Avenue and Mandela Drive, adjacent to the Portuguese Club and opposite the Nissan dealership, eMalahleni. The properties are currently vacant, except for a basketball court that is used by local residents.

The surrounding area is mostly developed, with land uses including residential, business, institutional and recreational taking place. The land towards the north, east and southeast of the site is vacant (Figure 6.2).

The following strategy was employed to inform the adjacent landowners/users of the proposed development:

- The directly adjacent and surrounding land users were identified remotely through the use of Google Earth, Street View and by doing a drive-by.

- In order to determine the registered owners of the various properties, a Deeds Search was conducted via the WinDeed system of the Deeds Office of South Africa. The Deeds Search Template provides information pertaining to land ownership, size and land value of each of the properties.

- Contact details for the adjacent landowners/users were obtained and they were informed of the proposed development telephonically and via email as indicated in Table 6.2.

- Background Information Documents were also distributed by hand to adjacent landowners/users whose contact details could not be obtained as indicated in Table 6.2.

- The proposed development and larger residential/business area are located in Ward 34. The ward councillor (Ms. L. Steyn) was contacted telephonically and via email (Table 6.2) to obtain her comment on behalf of the wider community.

- The ward councillor (Ms. L. Steyn) placed the notice and Background Information document on the Ward 34 Facebook page (Appendix 8).

A copy of the Background Information Document is provided in Appendix 9. The Background Information Document included the following information:

- Project name and reference number;
- Applicant name;
- Legal requirements and list of activities to be authorised;
- Details of the EAP;
- Description of the public participation process;
- Responsibilities of I&APs;
- Date by which I&APs must register and forward comment;
- A link to the AdiEnvironmental website for an electronic copy of the Background Information Document and Basic Assessment Report;
- Project and property description;
- Locality map;
- Proposed layout plan.
- Short description of the process to be followed and proposed timeline;
- Comment sheet.

Comments received from the adjacent landowners/users in response to the advertising and distribution of the Background Information Document are indicated in Table 6.2.

Table 6.2: Identified adjacent landowners/users who received BIDs/flyers

PROPERTY (FIGURE 6.2)	LANDOWNER/ CONTACT PERSON	CORRESPONDENCE	COMMENTS
Builders Warehouse	F. van Dyk H. Sepuba	E-mails (dated: 23 July 2020 & 4 August 2020; Appendix 11) with BID forwarded.	None
Casa Portuguesa Restaurant	P. Manarte	Hand delivered BID on 7 July 2020. E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None
CTM	A. Ndala	E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None
Del Judor X4 Neighbourhood Watch	S. White	E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None
Vacant Land Portions 415, 416, 120 and 121 of Zeekoewater 311 JS	eMalahleni Local Municipality (E. Nkabinde; O. Riba)	E-mails (dated: 23 July 2020 & 9 September 2020; Appendix 11) with BID forwarded.	None
Foton		No longer in business.	
Highveld Mall	C. Bendall	E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None
Highveld View Estate (CSI Rentals)	J. Laas	E-mail (dated: 23 July 2020; Appendix 11) with	None.

PROPERTY (FIGURE 6.2)	LANDOWNER/ CONTACT PERSON	CORRESPONDENCE	COMMENTS
		BID forwarded.	
Indlela Lodge	W. Cillie	E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None.
Jerobi Trailers	B. Ellis	Hand delivered BID on 7 July 2020. E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None
Jonsson Workwear	J. Loots	E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None
Portuguese Club	M. da Cunha	E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None
Resilient REIT Ltd. (Highveld Mall)	S. van der Walt	Telephone discussion (27 July 2020) and e-mail (dated: 27 July 2020; Appendix 11).	Yes. See Section 6.4.1.
Witbank Baptist Church	K. Buchan-Smith	E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded.	None.
Witbank Nissan	M. da Cunha	E-mail (dated: 23 July 2020; Appendix 11) with BID forwarded	None

6.4.1 Resilient REIT Ltd. (Highveld Mall) – S. van der Walt

Ms. S. van der Walt contacted AdiEnvironmental cc telephonically on 27 July 2020 in order to discuss the proposed development. Subsequently, an email (dated: 27 July 2020; Appendix 11) was received indicating the following:

Thanks for taking my call. If you could please advise the quantum in m^2 of rights that were applied for on this site?

Response from AdiEnvironmental

See Table 6.4.

Figure 6.2: Aerial view indicating adjacent landowners/users

6.5 Additional comment to be taken into consideration

A separate Basic Assessment process (including public participation) was conducted for the proposed filling station on a portion of Erven 20, President Park x6.

During this process, Mr. Steven Bloy (resident of Del Judor x4) indicated (email dated: 3 September 2020; Appendix 11) that he had '*seen bullfrogs on 2 occasions, once in December 2017 and again in December 2019, very close to the proposed site and would like to bring this to your attention'.* The completed comment sheet provided by Mr. Bloy is included in Appendix 11. Further details are provided in Table 6.4.

Response from AdiEnvironmental
See Table 6.4.

6.6 Department of Agriculture, Rural Development, Land and Environmental Affairs

The project was registered with the Department of Agriculture, Rural Development, Land and Environmental Affairs on 5 May 2021 (see cover letter and application dated: 5 May 2021; Appendix 1). In addition, a date for a meeting and site visit was requested.

6.7 List of Interested and Affected Parties

From the above public participation process, the following list of Interested and Affected Parties was compiled:

Table 6.3: List of Interested and Affected Parties

INTERESTED AND AFFECTED PARTY LIST	
Organisation	**Name**
Government Departments	
Department of Agriculture, Forestry and Fisheries (DAFF)	F. Mashabela
Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) - Directorate: Land Use and Soil Management – Ermelo	J. Venter
Department of Co-operative Governance and Traditional Affairs (COGTA)	M. Loock
Department of Mineral Resources	S. Mathavela
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	T. Mkhonto
Department of Water and Sanitation (DWS)	T. Ndlhovu
Other Organisations/Stakeholders	
Eskom Distribution (Land & Rights)	T. Ludere
Eskom Transmission	L. Motsisi

INTERESTED AND AFFECTED PARTY LIST	
Mpumalanga Tourism and Parks Agency (MTPA) – Land Advisory Unit	P. Nkosi
South African Civil Aviation Authority	K. Mthapo
South African Heritage Resources Agency (SAHRA)	N. Khumalo (SAHRIS)
South African National Roads Agency (SANRAL)	V. Bota, I. van der Linde, L. Dlanjwa
Trans African Concessions (TRAC)	C. Davis, R. Nkosi
Local Municipality and Municipal Councillor	
Nkangala District Municipality	S. Links, A. Thwala
eMalahleni Local Municipality	E. Nkabinde, O. Riba
eMalahleni Local Municipality	Councillor L. Steyn (Ward 34)
Surrounding Landowners	
Property (Figure 6.2)	**Landowner/Contact person**
Builders Warehouse	H. Sepuba
Casa Portuguesa Restaurant	P. Manarte
CTM	A. Ndala
Del Judor X4 neighbourhood watch	S. White
Vacant Land Portions 415, 416, 120 and 121 of Zeekoewater 311 JS	eMalahleni Local Municipality
Highveld Mall	C. Bendall
Highveld View Estate (CSI Rentals)	J. Laas
Indlela Lodge	W. Cillie
Jerobi Trailers	B. Ellis
Jonsson Workwear	J. Loots
Portuguese Club	M. da Cunha
Resilient REIT Ltd. (Highveld Mall)	S. van der Walt
Witbank Baptist Church	K. Buchan-Smith
Witbank Nissan	M. da Cunha
Other	
Leads to Business	D. Wessels
Resident of Del Judor X4	S. Bloy

6.8 Summary of issues and response

Appendix 1 (3)(h)(iii) of the EIA Regulations, 2014 (as amended) requires that a summary of the issues raised by Interested and Affected Parties be provided in the Basic Assessment Report as well as an indication of the manner in which the issues were addressed.

Table 6.4 provides such a summary as well as the response from the EAP.

Table 6.4: Summary of issues of concern and response		
Issue	**I&AP, Stakeholders, Authority (Section of Report)**	**Response**
Traffic Impact Assessment		
Although the N4 does not border on the proposed development, the development will probably have an impact on the traffic on the N4. *We will also require a TIA to be done to indicate the effect on Level of Services at the N4 terminal intersections with Mandela Drive for base year and 5 years from now.* *A recent TIA was conducted by consultants for Highveld Mall. Perhaps you could find out from Jandre if you could use the TIA to be amended with your development trips.*	TRAC (email from C. Davies dated: 23 July 2020; Appendix 10) – see Section 6.3.2	Email from AdiEnvironmental cc (dated: 23 July 2020; Appendix 10): "Thank you for your email and the information provided. You have been registered as an I&APs as requested. Your comments will be forwarded to the traffic engineer for his input."
Surely this TIA has to be revised/updated? It has been more than 10 years since it was first prepared and a lot has changed in this time.	SANRAL (email from I. van der Linde dated: 27 July 2020; Appendix 10) – see Section 6.3.2.	In response to the comments received from the SANRAL officials, a Traffic Impact Assessment was commissioned. The results of the said Traffic Impact Assessment are provided in Section 5.16 of this Basic Assessment Report. A copy of the said Traffic Impact Assessment is provided in Appendix 6.
I would have expected at the very least a locality plan to be attached – none of the referred plans or drawings are attached. *TRAC's comments are not attached, and neither are the e-mails referred to attached.* *I support Izak's comments – review of the TIA is a standard requirement. Please refer to Carla (TRAC) and Izak in this matter.* *Required upgrades are very localised. It does not even seem that the interchange was included in the original analysis. Please take note that the current status quo of the N4 interchange is already of particular concern with existing traffic, and any additional traffic from new development(s) cannot be supported without improvements to the interchange.*	SANRAL (email from K. Schmid dated: 28 July 2020; Appendix 10) – see Section 6.3.2	
Dear Eadie, I have just been corrected regarding attachment of TRAC comments. Apologies for that. It does however strengthen my concerns regarding the interchange.	SANRAL (email from K. Schmid dated: 28 July 2020; Appendix 10) - see Section 6.3.2	
Quantum of rights applied for		
If you could please advise the quantum in m^2 of rights that were applied for on this site.	Resilient REIT Ltd. (Highveld Mall) – S. van der Walt – see Section 6.4.1	The proposed development site is approximately 30 454m^2 in size. A retail (shopping) centre with a proposed total GLA of approximately 12 000m^2 is proposed for the said site. See Section 5.16.1 and Section 7.2 for further details.
Heritage Impact Assessment (HIA) and Palaeontological Impact Assessment (PIA) submitted		
The South African Heritage Resources Agency (SAHRA) Archaeology, Palaeontology and Meteorites (APM) Unit cannot comment until the draft Basic Assessment report is submitted to this case.	SAHRA – see Section 6.3.1	Noted. A Heritage Impact Assessment and a Palaeontological Impact Assessment were commissioned as part of the Basic Assessment process. The results of these studies are included in Section 5.14 of this BAR. A copy of the reports are provided in Appendix 4 and Appendix 5. The Draft BAR will be uploaded on the SAHRIS website.
Public Participation		
Can you please inform me to whom you have sent the email - it is very difficult to monitor and track Public participation if you forward the stuff left right and centre to the residents in the neighbourhood or neighbourhood watch - what is the use of including me then. *I am not very happy with the way you work - but i presume you have enough office staff to monitor emails, enquiries, inputs and complaints.*	Councillor L. Steyn (Ward 34) – see Section 6.3.3	Subsequent to receiving the email, Councillor Steyn was telephonically contacted and the matter discussed. Councillor Steyn indicated that: • her name must be kept on the Municipal email distribution group; • we should work through her with regards to informing the residents of projects.
Registration as Interested and Affected Party (I&AP)		
We would like to register as interested and affected party.	TRAC – see Section 6.3.2	Email from AdiEnvironmental cc (dated: 23 July 2020; Appendix 10): "Thank you for your email and the information provided. You have been registered as an I&APs as requested. Your comments will be forwarded to the traffic engineer for his input."
Please could I be added as an Interested and Affected Party for the above environmental process?	Debbie Wessels (Leads2Business) – see Section 6.1.4	Registered as an Interested and Affected Party – see Table 6.3.
Presence of bullfrogs		
Thank you for taking my call this morning. I receive a copy of the BID for the proposed development of a filling station at the corner of Nita Avenue and Mandela Drive today and would like to register as an I&AP. I will submit the completed form on another email. *I have been living in Del Judor Extension 4 since 2009 and I have seen bullfrogs on 2 occasions, once in December 2007 and again in December 2019, very close to the proposed site and would like to bring this to your attention. Photos are attached, with dates and times as the file names.*	Steven Bloy (resident of Del Judor x4) – see Section 6.5	A bullfrog specialist study was commissioned in order to address the concerns from Mr. Bloy. The results of the study are included in Section 5.8 of this BAR. Mitigation measures are provided in Section 9. A copy of the reports are provided in Appendix 3.
How do you think the proposed activity will impact on you? No personal impact, but the proposed site is in the immediate vicinity of an established giant bullfrog population. I have taken photos of breeding		

Table 6.4: Summary of issues of concern and response		
Issue	**I&AP, Stakeholders, Authority (Section of Report)**	**Response**
frogs in December 2017 and again in December 2019. *Any suggestions to mitigate potential impacts? Relocation of the adult bullfrogs, or setting aside a protected area adjacent to the proposed development.* *I have no interests in the development and support the sustainable development of the city of Witbank. I would however like to see this happen in a responsible and environmentally friendly fashion.*		

6.9 Evaluation of Draft Basic Assessment Report

As indicated in Section 11, the Draft Basic Assessment Report (BAR) will be made available to I&APs, stakeholders and government departments for a 30-day review period.

Hard/soft copies of the document will be submitted to relevant authorities. A hard copy and electronic copy of the Draft BAR will be made available to the Interested and Affected Parties and stakeholders consulted and/or registered as part of the process (refer to Table 6.3). An advertisement in this regard will be placed in the Witbank News in order to inform the larger community.

The various departments, stakeholders and I&APs will be requested to forward any comments on the report to the consultant within the 30-day period provided. These comments will be included and addressed in:

- Section 11 (Evaluation of Draft Basic Assessment Report);
- Table 11.1 (Summary of Issues of Concern and Response); and
- Appendix 14;

of the Final Basic Assessment Report.

The Final BAR (incorporating comments from I&APs) will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs for final decision making.

An e-mail will be forwarded to the various departments, stakeholders and Interested and Affected Parties informing them of the comments received and the submission of the Final BAR for decision making.

SECTION 7: DESCRIPTION OF ALTERNATIVES

According to Appendix 1 of the EIA Regulations, 2014 (as amended), one of the objectives of the basic assessment process is to identify the alternatives considered for the proposed development and to rank these alternatives in terms of the potential impacts identified in order to identify the preferred alternatives.

The EIA Regulations, 2014 (as amended) defines alternatives as:
"different means of meeting the general purpose and requirements of the activity, which may include alternatives to the -

a. *property on which or location where the activity is proposed to be undertaken;*
b. *type of activity to be undertaken;*
c. *design or layout of the activity;*
d. *technology to be used in the activity; or*
e. *operational aspects of the activity;*

and includes the option of not implementing the activity."

In addition to the above-mentioned, Section 24O(1)(b)(iv) of NEMA requires that the competent authority must take into account *"where appropriate, any feasible and reasonable alternatives to the activity which is the subject of the application and any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment."*

This section therefore provides a detailed description of the various alternatives investigated and process followed to decide on the preferred alternatives to be implemented.

The following alternatives were investigated:

- 7.1: Alternative sites;
- 7.2: Alternative land uses;
- 7.3: Alternative layout plans;
- 7.4: Alternative service provision (water, electricity, sewage, waste management and storm water management);
- 7.5: No-go option.

7.1 Alternative sites

7.1.1 Proposed site

The proposed Erven 20, 21 and 22 (originally part of Portion 234 of Zeekoewater 311 JS) were rezoned from Agriculture to Business 2 in 2013 as part of the President Park X6 township establishment.

The original land owner subsequently sold the three (3) erven to the applicant (Meronox (Pty) Ltd.) in 2019. The applicant wants to proceed with the development of the erven, but requires environmental approval before commencing since the original Environmental Authorisation (dated: 1 February 2011; Ref: 17/2/1/1/16(b) NK-26) expired due to no construction taking place.

The applicant decided upon the development of the proposed site for the following reasons:

- The applicant purchased the said site in 2019 (which was vacant and unmanaged) with the intention to develop the property to its full potential for the benefit of the community and the eMalahleni Local Municipality.
- The said site belongs to the project applicant.
- The site is situated within the urban edge of the eMalahleni Local Municipality.
- The site is already zoned for business purposes (Business 2).
- The site is situated in an area with a mixed land use character and the proposed retail centre will therefore fit in with the surrounding land uses and will not impact on the sense of place.
- Being located within an established urban area, services (water, sewage, electricity) can easily be provided by connecting to the existing networks of the eMalahleni Local Municipality.
- The site is located adjacent to Mandela Drive and Nita Avenue and would be highly visible and easily accessible. Access can be obtained from both Mandela Drive and Nita Avenue.
- The proposed business area adjacent to Mandela Avenue fits into the development plans of the eMalahleni Local Municipality (i.e. in terms of the Spatial Development Framework (2015)).
- The provision of stands for business purposes would provide business opportunities and potential employment to residents of the nearby residential area and eMalahleni.

7.1.2 Alternative site(s)

No alternative sites were identified for the proposed development since the applicant owns the said property as indicated above.

7.1.3 No Project Option

See Section 7.5 for further details in this regard.

7.2 Alternative land uses

Four (4) alternative land uses for the proposed development site were investigated, namely:

- Alternative land use 1 (Agriculture)
- Alternative land use 2 (Residential)
- Alternative land use 3 (Business)
- Alternative land use 4 (Light Industrial)

Table 7.1 provides the advantages and disadvantages of the above-mentioned alternatives.

Table 7.1: Matrix for determining the preferred alternative in terms of land use

Alternative	Advantages	Disadvantages	Ranking	Option selected
Alternative land use				
Alternative 1 – Agriculture		x The site has not been used for agricultural activities for many years. x The site is located within an established urban area where the surrounding land uses are no longer rural/agricultural. x The majority of the site comprises of an old borrow pit that was backfilled with building rubble and sand. x Venter (2020b) indicated that most of the site (i.e. the levelled area) falls within the Technosol group and more particularly the Johannesburg soil form (i.e. soil profiles covered by concrete structures, cement and waste materials including building gravel). This soil form is not suitable for agricultural purposes. In addition, the size and location make the site unsuitable for agricultural purposes (e.g. cultivation, grazing, etc.). x If agriculture was to be pursued, the property would have to be rezoned from Business 2 to Agriculture.	0 Fatal flaw	No
Alternative 2 - Residential	√ The site is located within an established urban area, which includes residential land uses. The development of houses on site could thus be compatible to that of the surrounding environment. √ Being located within an established urban area, services (water, sewage, electricity) can easily be provided by connecting to the existing networks of the eMalahleni Local Municipality.	x The applicant identified the need for a commercial/business development on site and not the need for more housing. x The site is located adjacent to Mandela Drive, which was identified in the Spatial Development Framework (2015) as one of the activity spines where the Municipality would allow non-residential land uses in order to optimally utilize the visual exposure from the high traffic volumes along this road. x The property would have to be rezoned from Business 2 to Residential. x An old backfilled borrow pit is present, which impacted on the geotechnical properties of the site. Mitigation measures as recommended by Hansmeyer (2010) would have to be implemented which could impact on the development costs.	2nd Option	No

Alternative	Advantages	Disadvantages	Ranking	Option selected
Alternative 3 – Business (retail centre)	√ *The site is already zoned for business purposes (Business 2).* √ *The site is situated in an area with a mixed land use character and the proposed retail centre will therefore fit in with the surrounding land uses and would not impact on the sense of place.* √ *The site is located adjacent to Mandela Drive, which was identified in the Spatial Development Framework (2015) as one of the activity spines where the Municipality would allow non-residential land uses in order to optimally utilize the visual exposure from the high traffic volumes along this road. The proposed business area adjacent to Mandela Avenue therefore fits into the development plans of the eMalahleni Local Municipality.* √ *Being located within an established urban area, services (water, sewage, electricity) can easily be provided by connecting to the existing networks of the eMalahleni Local Municipality (see Section 7.4 For further details).*	x *An old backfilled borrow pit is present, which impacted on the geotechnical properties of the site. Mitigation measures as recommended by Hansmeyer (2010) would have to be implemented which could impact on the development costs.*	*1 Preferred*	***Yes***
Alternative 4 – Light Industrial	√ Being located within an established urban area, services (water, sewage, electricity) can easily be provided by connecting to the existing networks of the eMalahleni Local Municipality (see Section 7.4 for further details).	x The site would have to be rezoned from 'Business' to 'Industrial 2'. x A light industrial development would not be compatible with the existing land uses and would impact on the sense of place. x It would not be in line with the development plans of the eMalahleni Local Municipality as stated in the Spatial Development Framework (2015).	0 Fatal flaw	No

Legend: 0 = Fatal Flaw; 1 = Preferred Option; 2 = Second Option; 3 = Third Option

As indicated in Table 7.1, **the preferred option is Alternative land use 3 (Business).**

As previously indicated, the applicant intends to develop a retail centre on the proposed site with a total GLA of 12 000m^2. Figure 7.1 provides a side view of the proposed retail centre while Figure 7.2 provides a 3D schematic thereof.

According to the information provided, the total Gross Building Areas of the proposed retail centre will be 26 654.40 m^2 and will adhere to the following municipal requirements:

Municipal Requirements	
Zoning	Business 2
Area of Site	30 439.70
Footprint	10 771.40
Coverage (Max 70%)	35.9%
Floor Area Ratio (Max 1.2)	0.88

A **Basement Parking area** will be provided underneath the shops (Figure 7.1) and will be 9416.00 m^2 in size. It will provide approximately 261 covered parking bays as indicated in Figure 7.3b.

The **Ground Level** (Figure 7.1) will be 9098.40 m^2 in size and will make provision for various line and anchor shops (e.g. supermarket, liquor store, pet centre, coffee shop, etc.) of various sizes as indicated in the table below and in Figure 7.3a.

GROUND LEVEL	
Area	**Size (m^2)**
Shop 1	608.0
Shop 2	1776.0
Shop 3	1080.0
Shop 4	2221.0
Shop 5	938.0
Shop 6	957.0
Coffee Shop	215.0
Line Shops (15 OFF)	721.40
Drive Thru 1	198.0
Drive Thru 2	192.00
Drive Thru 3	192.00
Total	**9098.40 m^2**

Provision will also be made for office space and toilets (see table below) on the **First/Top Level** of the retail centre as indicated in Figure 7.1 and Figure 7.3b).

FIRST/TOP LEVEL	
Area	**Size (m^2)**
- Offices	6317.00 m^2
- Public Toilets	150.00 m^2
Sub-Total	**6467.00 m^2**

In addition to the above-mentioned, covered decks (1161.00 m^2) and covered walkways (1673.00 m^2) will also be provided. In total, 544 parking bays will be provided (including 238 open bays).

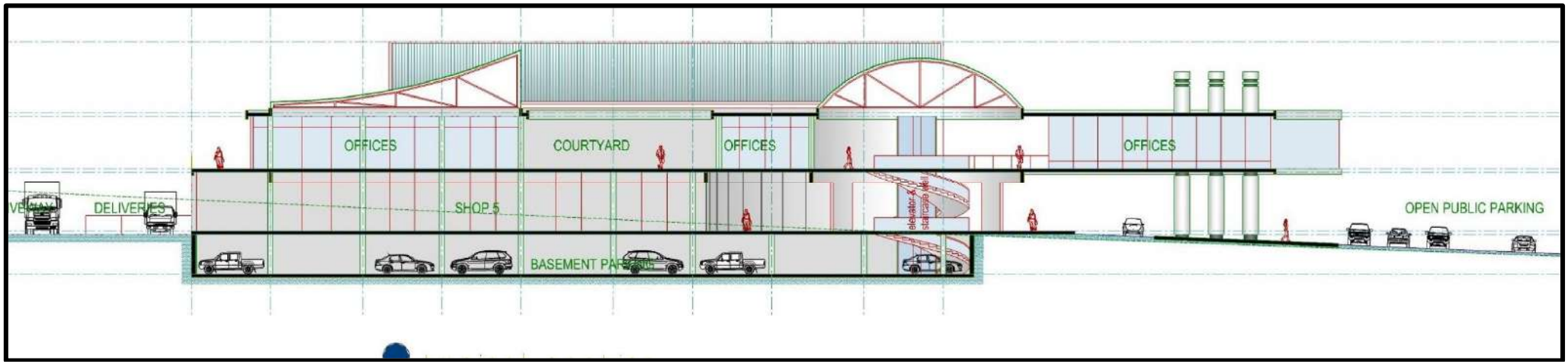


Figure 7.1: Side view of the proposed retail centre (designed by Michael M. Payne & Associates Architects, 2020)

3D perspective - 01

3D perspective - 02

Figure 7.2: 3D Schematic of Proposed Retail Centre (designed by Michael M. Payne & Associates Architects, 2020)

Figure 7.3a: Site Development Plan (Ground Level) (designed by Michael M. Payne & Associates Architects, 2020)

Figure 7.3b: Site Development Plan (Basement Parking and First/Top level) (designed by Michael M. Payne & Associates Architects, 2020)

7.3 Alternative layout plans

Four (4) alternative layouts for the proposed development were investigated, namely:

- Alternative layout 1 (original layout plan) – Figure 7.4.
- Alternative layout 2 (original layout plan with filling station) – Figure 7.5;
- Alternative layout 3 (realign access road from Mandela Drive) – Figure 7.6.
- Alternative layout 4 (removed traffic circle and R.O.W.) – Figure 7.7.

Table 7.2 provides the advantages and disadvantages of the above-mentioned alternatives.

As indicated in Table 7.2, **the preferred option is Alternative layout 4 (Figure 7.7).**

Figure 7.4: Alternative layout 1 (original layout) (designed by Michael M. Payne & Associates Architects, 2020)

Figure 7.5: Alternative layout 2 (original layout with filling station) (designed by Michael M. Payne & Associates Architects, 2020)

Figure 7.6: Alternative layout 3 (re-aligned access road from Mandela Drive) (designed by Michael M. Payne & Associates Architects, 2020)

Figure 7.7: Alternative layout 4 (removed traffic circle and portion of R.O.W.; included storm water attenuation structures) (taken from EDL Consulting Engineers, 2021)

Table 7.2: Matrix for determining the preferred alternative in terms of layout plan

Alternative	Advantages	Disadvantages	Ranking	Option selected
Alternative land use				
Alternative layout 1 (original layout plan) – Figure 7.4.	√ The north western corner of the site is set aside for future development, allowing for the future expansion of the retail centre in line with the latest trends.	x A small portion of the north eastern corner of the site (access road, traffic circle, Right-of-Way (R.O.W.) road/servitude) is located within the 28m wetland buffer associated with the adjacent Seep Wetland.	0 Fatal flaw	No
Alternative layout 2 (original layout plan with filling station) – Figure 7.5.	√ The site would be developed to its full potential including a filling station in the north western corner of the site.	x A small portion of the north eastern corner of the site (access road, traffic circle, Right-of-Way (R.O.W.) road/servitude) is located within the 28m wetland buffer associated with the adjacent Seep Wetland. x The current zoning of Business 2 does not make provision for a filling station. A consent use application would have to be submitted and approved by the ELM. x The construction and operation of a filling station triggers Listed Activity 14 of Listing Notice 1 (GN R327). A Basic Assessment process would have to be followed and an Environmental Authorisation obtained before a filling station can be constructed in the north western corner of the site. A separate Basic Assessment process is being undertaken in this regard.	0 Fatal flaw	No
Alternative layout 3 (realigned access from Mandela Drive) – Figure 7.6.	√ The site would be developed to its full potential including a filling station in the north western corner of the site. √ The access road from Mandela Drive was realigned with the majority of the access road now located outside of the 28m wetland buffer associated with the adjacent Seep Wetland. √ According to Venter (pers. comm.), the portion of the access road that is still located within the wetland buffer is mostly located in the road reserve of Mandela Drive which has been impacted in terms of past activities, e.g. development of the storm water	x A portion of the traffic circle and the Right-of-Way (R.O.W.) road/servitude are still located within the 28m wetland buffer associated with the adjacent Seep Wetland. x The current zoning of Business 2 does not make provision for a filling station. A consent use application would have to be submitted and approved by the ELM. x The construction and operation of a filling station triggers Listed Activity 14 of Listing Notice 1 (GN R327). A Basic Assessment process would have to be followed and an	0 Fatal flaw	No

Alternative	Advantages	Disadvantages	Ranking	Option selected
	system associated with Mandela Drive, levelling and landscaping of the area (including planting of trees) so that pedestrians can utilise the pavement area; occasional parking of vehicles by local hawkers, etc. √ According to Van Rooyen (2020), the proposed access roads were approved by the eMalahleni Local Municipality (i.e. in terms of the previous Traffic Impact Assessment done by WSP in March 2010).	Environmental Authorisation obtained before a filling station can be constructed in the north western corner of the site. A separate Basic Assessment process is being undertaken in this regard.		
Alternative layout 4 (removed traffic circle and R.O.W) – Figure 7.7.	√ *The north western corner of the site is set aside for future development, allowing for the future expansion of the retail centre in line with the latest trends.* √ *The access road from Mandela Drive was realigned with the majority of the access road now located outside of the 28m wetland buffer associated with the adjacent Seep Wetland.* √ *According to Venter (pers. comm.), the portion of the access road that is still located within the wetland buffer is mostly located in the road reserve of Mandela Drive which has been impacted in terms of past activities, e.g. development of the storm water system associated with Mandela Drive, levelling and landscaping of the area (including planting of trees) so that pedestrians can utilise the pavement area; occasional parking of vehicles by local hawkers, etc.* √ *According to Van Rooyen (2020), the proposed access roads were approved by the eMalahleni Local Municipality (i.e. in terms of the previous Traffic Impact Assessment done by WSP in March 2010).* √ *The traffic circle associated with the access road from Mandela Drive was removed.* √ *The Right-of-Way (R.O.W.) road/servitude is located outside of the 28m wetland buffer associated with the adjacent Seep Wetland.* √ *The said layout plan also makes provision for storm water attenuation structures located outside of the 28m wetland buffer associated with the adjacent Seep Wetland (Figure 7.10).*		*1 Preferred*	***Yes***

Legend: 0 = Fatal Flaw; 1 = Preferred Option; 2 = Second Option; 3 = Third Option

7.4 Alternative service provision

The proposed development site is located within the eMalahleni Local Municipality and can connect to the existing municipal services (water, sewage, electricity, etc.). Figure 7.8 indicates the location of the existing municipal water and sewer infrastructure adjacent to the site.

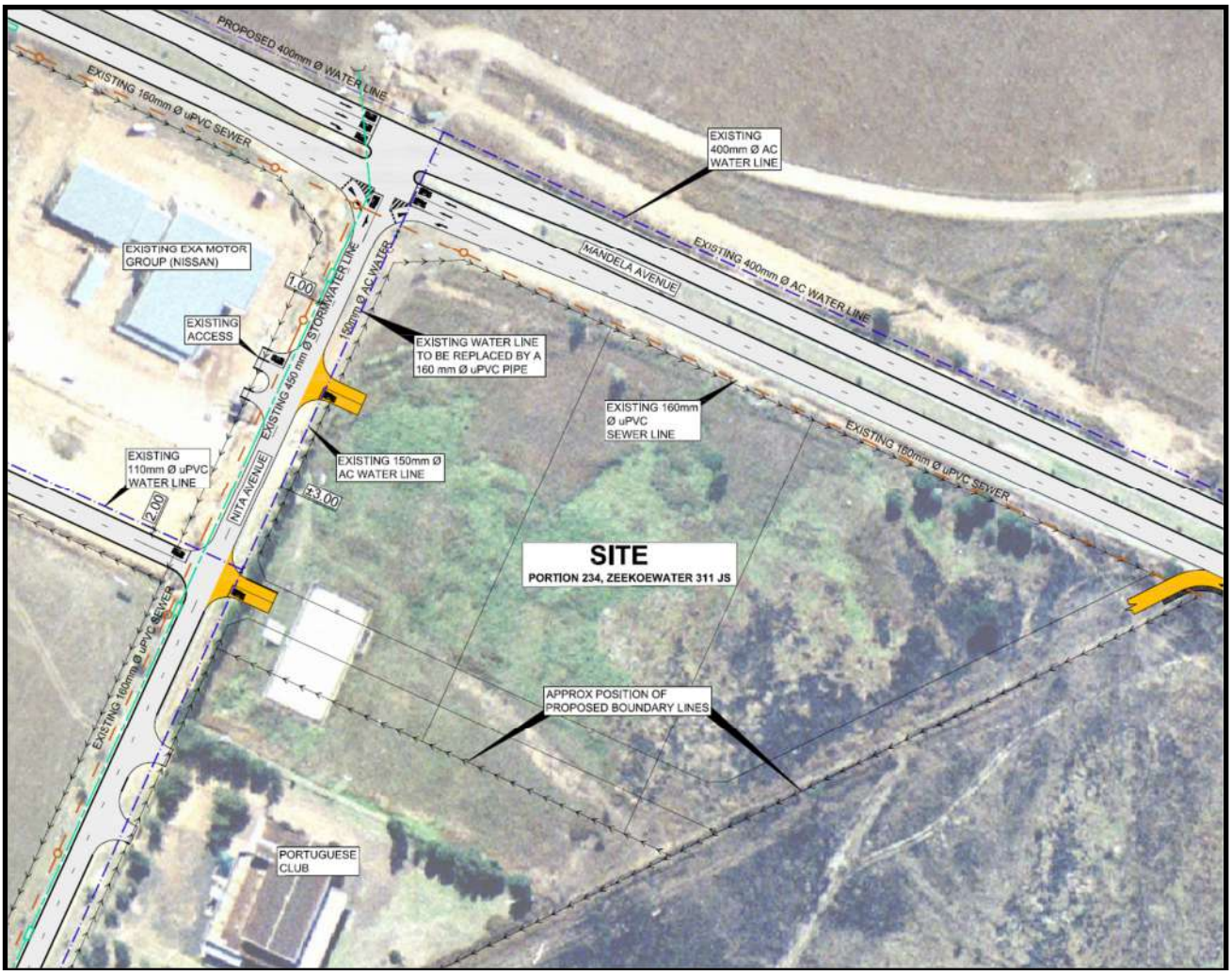


Figure 7.8: Location of the existing municipal water and sewer infrastructure adjacent to the site (taken from WSP SA Civil and Structural Engineers (Pty) Ltd., 2010)

Table 7.3 provides an indication of the alternatives investigated with regards to service provision:

- Water provision;
- Electricity;
- Sewage disposal;
- Waste disposal;
- Storm water management.

As indicated in Table 7.3, **the preferred options with regards to service provision are as follows:**

Water provision	Alternative 1 - water from eMalahleni Local Municipality; connect to existing water infrastructure of eMalahleni Local Municipality (Figure 7.8).
Electricity	Alternative 1 - obtaining electricity from eMalahleni Local Municipality.
Sewage disposal	Alternative 1 – connect to existing sewer infrastructure of eMalahleni Local Municipality (Figure 7.8).
Waste disposal	Alternative 1 – waste collected by eMalahleni Local Municipality.
Storm water management	Alternative 2 - connecting to the existing municipal storm water system of the eMalahleni Local Municipality and upgrading thereof with attenuation of stormwater (Figure 7.10).

Table 7.3: Matrix for determining the preferred alternative in terms of service provision

Alternative	Advantages	Disadvantages	Ranking	Option selected
Alternative service provision				
7.4.1 Water provision				
Alternative 1 - water from eMalahleni Local Municipality	√ *The development can connect to the existing 150 mm water pipeline, which is located along the western boundary of the site and connects to a larger 400mm diameter AC water main running parallel to and north of Mandela Drive (Figure 7.8). It is anticipated that a Class 16 uPVC pipe will be installed as well as a 110mm uPVC water connection to the site.*	x *The eMalahleni Local Municipality indicated that the existing water pipeline is old and unreliable and that a 350 m long section of the pipeline from the Nita Avenue/Mandela Drive crossing to Del Judor X4 be replaced by a 160 mm diameter uPVC pipe.*	*1 Preferred*	***Yes***
Alternative 2 - surface water		x No surface water environments (river/stream) are located on site. A Seep Wetland is located to the east of the site, which becomes a Valley Bottom Wetland drainage area. x A hydrological study would have to be conducted to determine if a sustainable volume of water is available from the unnamed tributary of the Olifants River (locally known as Madelspruit; located approximately 800 m west of the site) or the Olifants River (located 3.8km east of the site). x A water treatment plant would have to be installed to treat the water to potable standards as the water is these systems could be polluted due to residential, industrial, mining, etc. activities. x A pump would have to be installed in the river, which would be risky in terms of theft. x A pipeline would have to be installed from the river, across numerous wetlands and roads, to the site. x A servitude would have to be registered across the adjacent properties. x A water use license would be required from the Department of Water and Sanitation.	0 Fatal flaw	No
Alternative 3 – groundwater		x A geohydrological study would have to be conducted to determine if a sustainable water supply could be provided in view of the previous quarrying activities	2nd Option	No

Alternative	Advantages	Disadvantages	Ranking	Option selected
		(old borrow pit present on site) having taken place on site. x Boreholes would have to be drilled. x Water may have to be treated to potable standards before being used. x A water use license would be required from the Department of Water and Sanitation.		
7.4.2 Electricity				
Alternative 1 - electricity from the eMalahleni Local Municipality	√ *The proposed development falls under the jurisdiction of the eMalahleni Local Municipality and can connect to the existing municipal electrical network.*		*1 Preferred*	***Yes***
Alternative 2 - obtaining electricity from Eskom		x The proposed development falls under the jurisdiction of eMalahleni Local Municipality and can therefore not connect directly to the Eskom grid.	0 Fatal flaw	No
7.4.3 Sewage disposal				
Alternative 1 - connecting to the existing municipal sewer infrastructure of the eMalahleni Local Municipality	√ *There are existing 160 mm diameter uPVC sewer lines present along the northern boundary of the site and west of Nita Avenue (Figure 7.8).* √ *The development can connect to the eMalahleni Local Municipality sewer system by means of a 110 mm uPVC sewer connection.* √ *According to WSP (2010), the eMalahleni Local Municipality indicated that the existing sewer line will have sufficient capacity for a retail development.*	x If the municipal sewer infrastructure is not maintained resulting in blockages, overflowing manholes, etc., it could impact on the retail centre and surrounding businesses/residents in terms of odours. Depending on the location of the overflowing manholes, it could impact on the adjacent Seep Wetland and the associated downstream areas.	*1 Preferred*	***Yes***
Alternative 2 - sewage package plant		x Engineers would have to be appointed to determine the size and placing of a sewage package plant. x The estimated wastewater treatment demand may not warrant the installation of a sewage treatment/package plant (increased construction and maintenance costs). x Parking/retail space would be lost to make space for a sewage treatment/package plant. x If the sewage treatment/package plant is not functioning properly, it could impact on the retail	2nd Option	No

Alternative	Advantages	Disadvantages	Ranking	Option selected
		centre and surrounding businesses/residents in terms of odours if the effluent does not meet the required standards. x If the sewage treatment/package plant is not functioning properly, it could impact on the adjacent Seep Wetland and the associated downstream areas if the effluent does not meet the required standards. x A water use license would be required from the Department of Water and Sanitation.		
Alternative 3 - septic tank and French drain		x Septic tanks with French drains are no longer accepted by the Department of Water and Sanitation due to the potential pollution risks.	0 Fatal flaw	No
Alternative 4 – conservancy tanks		x Engineers would have to be appointed to determine the size and placing of conservancy tanks. x Parking/retail space would be lost to make space for the conservancy tanks. x The conservancy tanks would have to be emptied on a regular basis by means of a honey sucker. This would result in additional costs as a service provider would have to be sourced. x The sewage would have to be disposed at one of the Sewage Treatment Plants in eMalahleni, which would also result in additional costs. x There is a risk that the conservancy tank/tanks could overflow, resulting in soil and groundwater pollution as well as bad odours. Overflows could also impact on the nearby Seep Wetland depending on the location of the conservancy tank(s).	0 Fatal flaw	No
7.4.4 Waste management				
Alternative 1 – waste collected by the eMalahleni Local Municipality	✓ *The site falls within the urban edge of the eMalahleni Local Municipality where municipal services are provided.* ✓ *Refuse will thus be collected by the eMalahleni Local Municipality's refuse removal unit and will be disposed of at the registered Leeuwpoort Waste Disposal Site.* ✓ *As per the ELM requirements, a central*	x Odours emanating from the central refuge area if waste is not collected by the ELM refuse removal unit on a regular basis allowing waste to accumulate on site.	*1* *Preferred*	***Yes***

Alternative	Advantages	Disadvantages	Ranking	Option selected
	refuse area (with waste skips) will be provided near the site boundary in Nita Avenue for easy collection by the municipality.			
Alternative 2 – new onsite waste disposal site		x The said site is only 3ha in extent. Parking/retail space would be lost in order to make provision for a waste disposal site. x An onsite waste disposal site would impact on the retail centre and surrounding businesses/residents in terms of odours, flies and rodents. x A waste management license would have to be obtained. x An onsite waste disposal site would result in additional costs since the applicant would have to appoint a service provider to manage the site.	0 Fatal flaw	No
7.4.5 Storm water management				
Alternative 1 - connecting to the existing municipal storm water system of the eMalahleni Local Municipality and upgrading thereof but no attenuation of storm water (Figure 7.9)	✓ The site falls within the urban edge of the eMalahleni Local Municipality where municipal services are provided. ✓ The development can connect to the existing municipal storm water system in Nita Avenue and Mandela Drive but must be upgraded as indicated in Figure 7.9. ✓ Kerb and Grid inlets to be placed strategically over the site (Figure 7.9) in such a manner as to capture most of the storm water running along the paved/surfaced areas of the parking and service road areas towards the northern boundary of the site (natural flow direction). ✓ The captured storm water from the roofs of the buildings to be captured by kerbed inlets to the south of the site and conveyed through pipes to the north (Figure 7.9). ✓ The remaining storm water to be discharged by means of the various green areas on site (i.e. gardens, etc.) as well as a green area in the eastern corner (i.e. the wetland buffer	x The storm water management plan as provided in Figure 7.9 does not provide attenuation ponds to allow for the attenuation of storm water on site before the said storm water is released. x The outlet structures north of Mandela Drive (Figure 7.9) are not provided with erosion protection (energy breakers) and gabion mattresses in order to minimise the effect of erosion at these outlets as a result of scouring and elevated flow velocities. This would impact on the downstream Seep Wetland.	0 Fatal Flaw	**No**

Alternative	Advantages	Disadvantages	Ranking	Option selected
	associated with the adjacent Seep Wetland area) as indicated in Figure 7.9. ✓ The eastern storm water pipe to tie into the existing culvert below Mandela Drive (Figure 7.9) in order to drain the easternmost storm water on site.			
Alternative 2 - connecting to the existing municipal storm water system of the eMalahleni Local Municipality and upgrading thereof with attenuation of storm water (Figure 7.10)	✓ *The site falls within the urban edge of the eMalahleni Local Municipality where municipal services are provided.* ✓ *The development can connect to the existing municipal storm water system in Nita Avenue and Mandela Drive (Figure 7.8) but must be upgraded as the storm water management plan designed by EDL Engineers (Pty) Ltd. (Appendix 12) and indicated in Figure 7.10.* ✓ *Kerb and Grid inlets to be placed strategically over the site (Figure 7.10) in such a manner as to capture most of the storm water running along the paved/surfaced areas of the parking and service road areas towards the northern boundary of the site (natural flow direction).* ✓ *Three (3) attenuation ponds to be placed as indicated in Figure 7.10 to allow for the attenuation of storm water on site.* ✓ *The captured storm water from the roofs of the buildings to be captured by kerbed inlets to the south of the site and conveyed through pipes to the north (Figure 7.10).* ✓ *The outlet structure north of Mandela Drive to be fitted with erosion protection (energy breakers) and gabion mattresses to minimise the effect of erosion at this outlet as a result of scouring and elevated flow velocities.* ✓ *The remaining storm water to be discharged by means of the various green areas on site*		*1 Preferred*	***Yes***

Alternative	Advantages	Disadvantages	Ranking	Option selected
	(i.e. gardens, etc.) as well as a green area in the eastern corner (i.e. the wetland buffer associated with the adjacent Seep Wetland area) as indicated in Figure 7.10. ✓ *The storm water pipe from the proposed attenuation pond to tie into the existing culvert below Mandela Drive (Figure 7.10) in order to drain the easternmost storm water on site.* ✓ *The outlet structure north of Mandela Drive to be fitted with erosion protection (energy breakers) and gabion mattresses to minimise the effect of erosion at this outlet as a result of scouring and elevated flow velocities.*			

Storm water management (Alternative 2; Figure 7.10)

A storm water management plan was drafted for the development site by J.M. van Rooyen of EDL Engineers (Pty) Ltd. A copy of the said report is provided in Appendix 12 and should be consulted with regards to the methodology used.

Pre-development and post development flows were calculated and are provided in the said report. According to Van Rooyen (2021), the eMalahleni Local Municipality requires that the amount of post-developed runoff, which is discharged into the existing system/surrounding road network, cannot exceed the pre-developed discharge in a major storm event. It is therefore required that excess discharge either be:

- managed on site by temporary storage thereof on site until it can be discharged into the existing system once the peak storm event has passed or;
- allowed to flow (less than or equal to the pre-developed 1:5 major storm event volume) into the surrounding roads.

Van Rooyen (2021) calculated that approximately 1.365m³/s of storm water runoff water will have to be conveyed from the site. This includes storm water emanating from the Portuguese Club area.

The following storm water management plan as indicated in Figure 7.10 was proposed:

- Kerb and Grid inlets to be placed strategically over the site in such a manner as to capture most of the storm water running along the paved/surfaced areas of the parking and service road areas towards the northern boundary of the site (natural flow direction).
- Three (3) attenuation ponds to be placed as indicated in Figure 7.10 to allow for the attenuation of storm water on site.
- The captured storm water from the roofs of the buildings to be captured by kerbed inlets to the south of the site and conveyed through pipes to the north (Figure 7.10).
- The outlet structure north of Mandela Drive to be fitted with erosion protection (energy breakers) and gabion mattresses to minimise the effect of erosion at this outlet as a result of scouring and elevated flow velocities.
- The remaining storm water to be discharged by means of the various green areas on site (i.e. gardens, etc.) as well as a green area in the eastern corner (i.e. the wetland buffer associated with the adjacent Seep Wetland area) as indicated in Figure 7.10.
- The storm water pipe from the proposed attenuation pond to tie into the existing culvert below Mandela Drive (Figure 7.10) in order to drain the easternmost storm water on site. The outlet structure north of Mandela Drive to be fitted with erosion protection (energy breakers) and gabion mattresses to minimise the effect of erosion at this outlet as a result of scouring and elevated flow velocities.

Van Rooyen (2021) indicated that the idea behind the proposed storm water management plan is to allow the natural flow of storm water from site (according to the contour levels and the average slope over the site), ultimately releasing the said storm water to the north of Mandela Drive (i.e. in the vacant area belonging to the eMalahleni Local Municipality) as is currently the case. Erosion protection (energy breakers) and gabion mattresses will however, be provided at all the outlet structures to minimise

the effect of erosion as a result of scouring and elevated flow velocities. This would reduce the potential impact on the downstream areas (including the Seep Wetland that becomes a Channelled Valley Bottom Wetland; Figure 5.17).

It should be noted that Figure 7.9 does not make provision for the attenuation of storm water on site or the provision of erosion protection (energy breakers) and gabion mattresses to minimise the effect of erosion at the outlets as a result of scouring and elevated flow velocities.

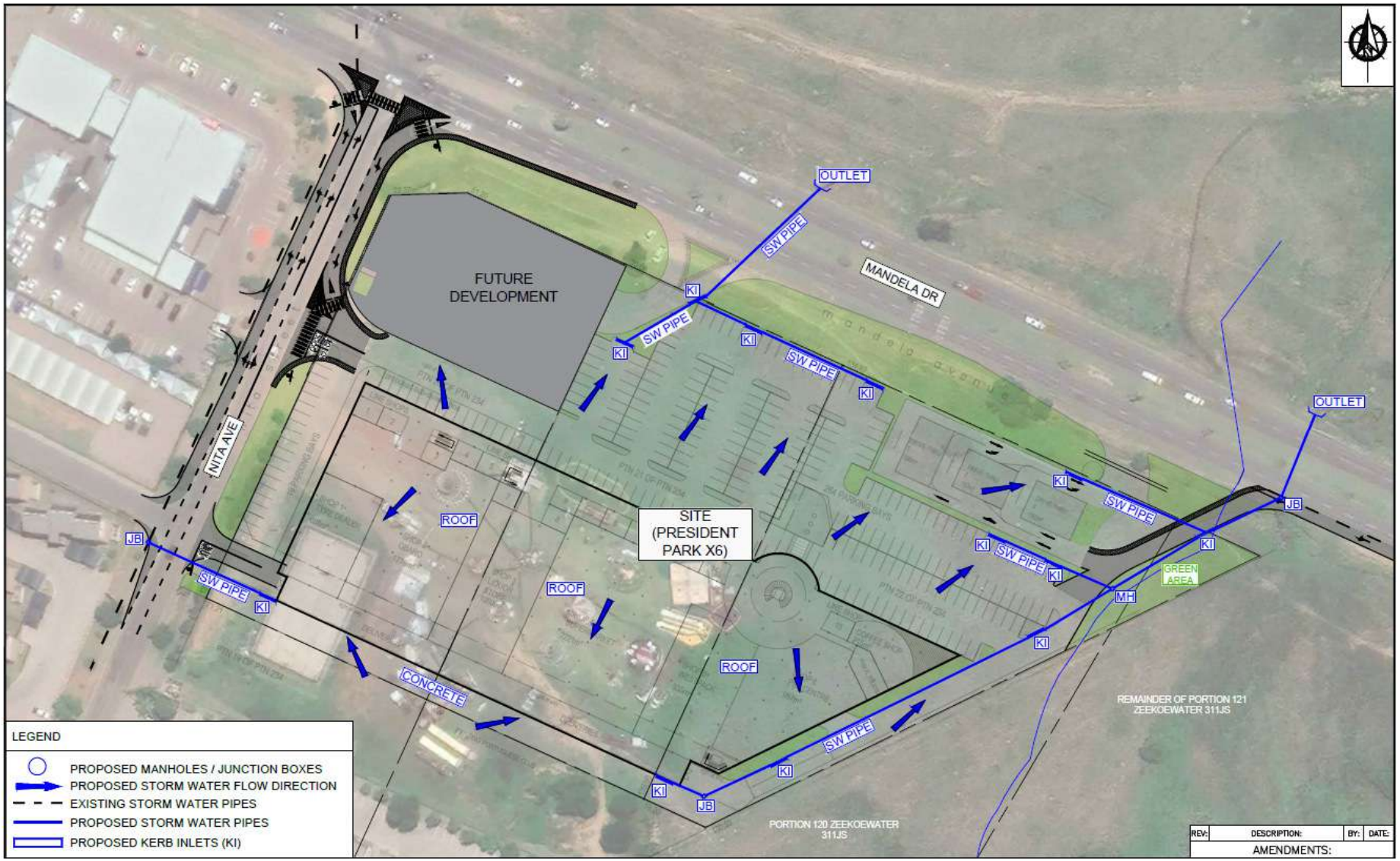


Figure 7.9: Alternative 1 Storm water management without attenuation (taken from Van Rooyen, 2021)

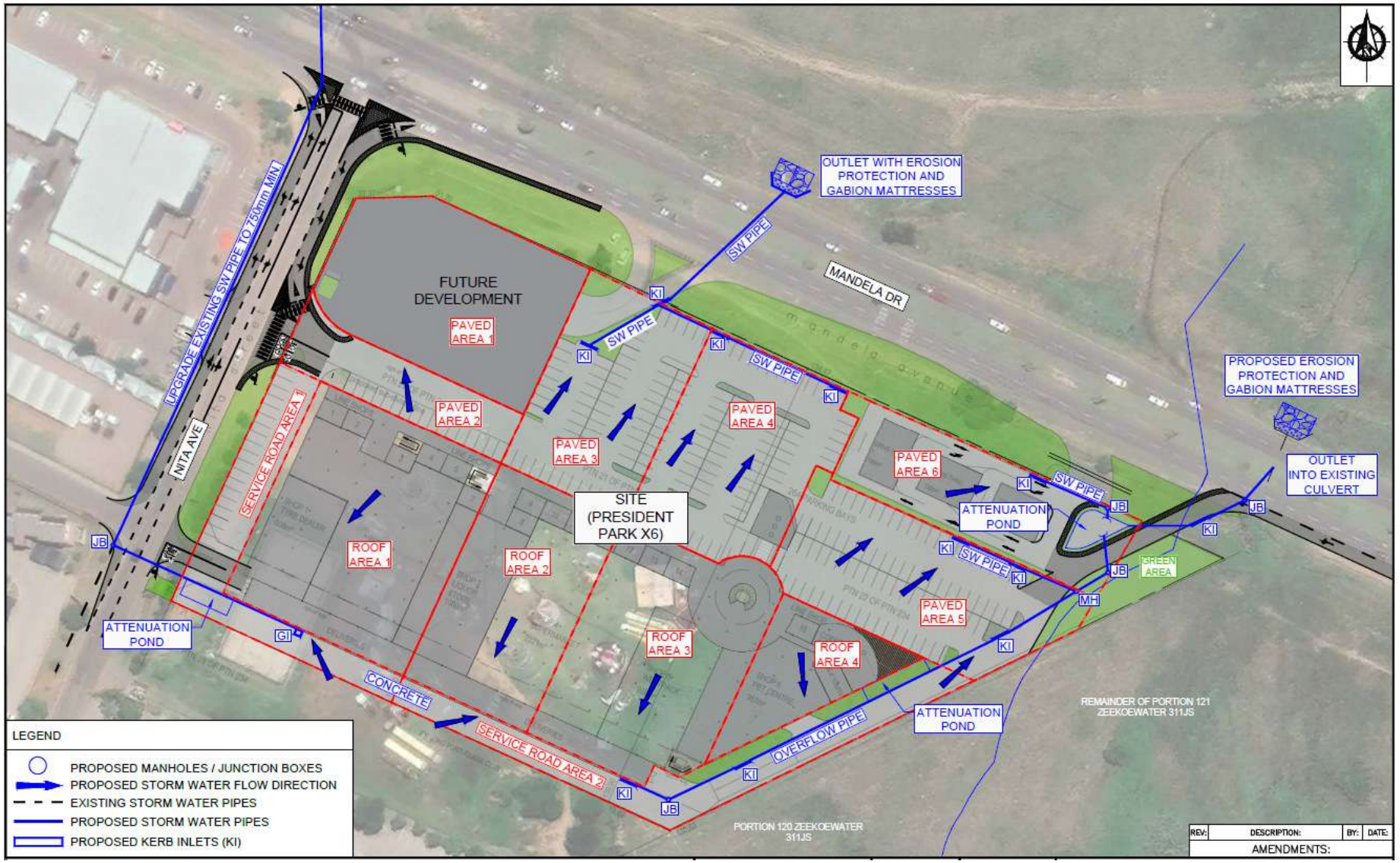


Figure 7.10: Alternative 2 Storm water management with attenuation (taken from Van Rooyen, 2021)

7.5 The 'No Project Option'

The 'No Project Option' is the alternative of not going ahead with the proposed development. The 'No Project Option' is only considered if it is found that the development will have significant negative impacts on the environment, which cannot be mitigated or managed.

If the 'No Project Option' in terms of the proposed development was exercised, it could mean that:

- A prime development site would stay vacant and not be able to reach its full development potential benefitting the community of eMalahleni.
- The site would remain unkempt, posing a health and safety risk to residents living in the nearby residential area as well as eMalahleni as a whole.
- The eMalahleni Local Municipality would not be able to meets its goal of developing the said area in line with the Spatial Development Framework (2015).
- Potential business and employment opportunities for residents of the nearby residential area and eMalahleni as a whole would be lost.
- Other potential uses for the site would have to be investigated.
- The applicant could sell the property.

7.6 Concluding statement on alternatives

In summary, the following alternatives are deemed feasible and will be assessed in Section 8 of this document:

Section	Preferred Alternative	Description
7.1	Site: Erven 20, 21 and 22	The development site will be located on Erven 20, 21 and 22 of President Park X6, eMalahleni.
7.2	Business (retail centre) Alternative 3	A retail centre will be established on the said property.
7.3	Layout 4 (Figure 7.7)	All infrastructure located outside of the 28m buffer associated with the adjacent Seep Wetland. No provision made for a filling station.
7.4.1	Water provision Alternative 1	Water from eMalahleni Local Municipality and connect to existing water infrastructure of eMalahleni Local Municipality
7.4.2	Electricity Alternative 1	Obtaining electricity from eMalahleni Local Municipality
7.4.3	Sewage disposal Alternative 1	Connecting to existing sewer infrastructure of eMalahleni Local Municipality.
7.4.4	Waste management Alternative 1	Waste collected by the eMalahleni Local Municipality and disposed of at the registered Leeuwpoort Waste Disposal Site.
7.4.5	Storm water management Alternative 2 (Figure 7.10)	Connecting to the existing municipal storm water system of the eMalahleni Local Municipality and upgrading thereof with attenuation of storm water.

SECTION 8: ENVIRONMENTAL IMPACT DESCRIPTION AND EVALUATION

8.1 Introduction

As required in terms of Appendix 1 of the EIA Regulations, 2014 (as amended), this section of the report describes the impacts and risks identified (physical and social) as a result of the proposed project, including:

- an indication of the preferred alternatives;
- the methodology used in determining and ranking the potential impacts;
- the nature, significance, consequence, extent, duration and probability of the impacts during all phases of the development;
- the degree to which these impacts can be avoided, managed, mitigated, reversed or may cause irreplaceable damage;
- positive impacts;
- cumulative impacts;
- mitigation measures to be implemented.

The impacts presented in this section were identified through the status quo of the environment, specialist input, experience of the EAPs and comment from I&APs.

8.2 Description of the preferred alternatives

Section 7 provides a detailed description of all alternatives investigated with regards to this project. As indicated in Section 7.6, the following alternatives are deemed feasible and will be assessed in Section 8.5:

Preferred Alternative	Description
Site: Erven 20, 21 and 22	The development site will be located on Erven 20, 21 and 22 of President Park X6, eMalahleni.
Business (retail centre) Alternative 3	A retail centre will be established on the said property.
Layout 4 (Figure 8.1)	All infrastructure located outside of the 28m buffer associated with the adjacent Seep Wetland. No provision made for a filling station (Figure 7.7).
Water provision Alternative 1	Water from eMalahleni Local Municipality and connect to existing water infrastructure of eMalahleni Local Municipality.
Electricity Alternative 1	Obtaining electricity from eMalahleni Local Municipality.
Sewage disposal Alternative 1	Connecting to existing sewer infrastructure of eMalahleni Local Municipality.
Waste management Alternative 1	Waste collected by the eMalahleni Local Municipality and disposed of at the registered Leeuwpoort Waste Disposal Site.
Storm water management Alternative 2 (Figure 8.1)	Connecting to the existing municipal storm water system of the eMalahleni Local Municipality and upgrading thereof with attenuation of storm water (Figure 7.10).

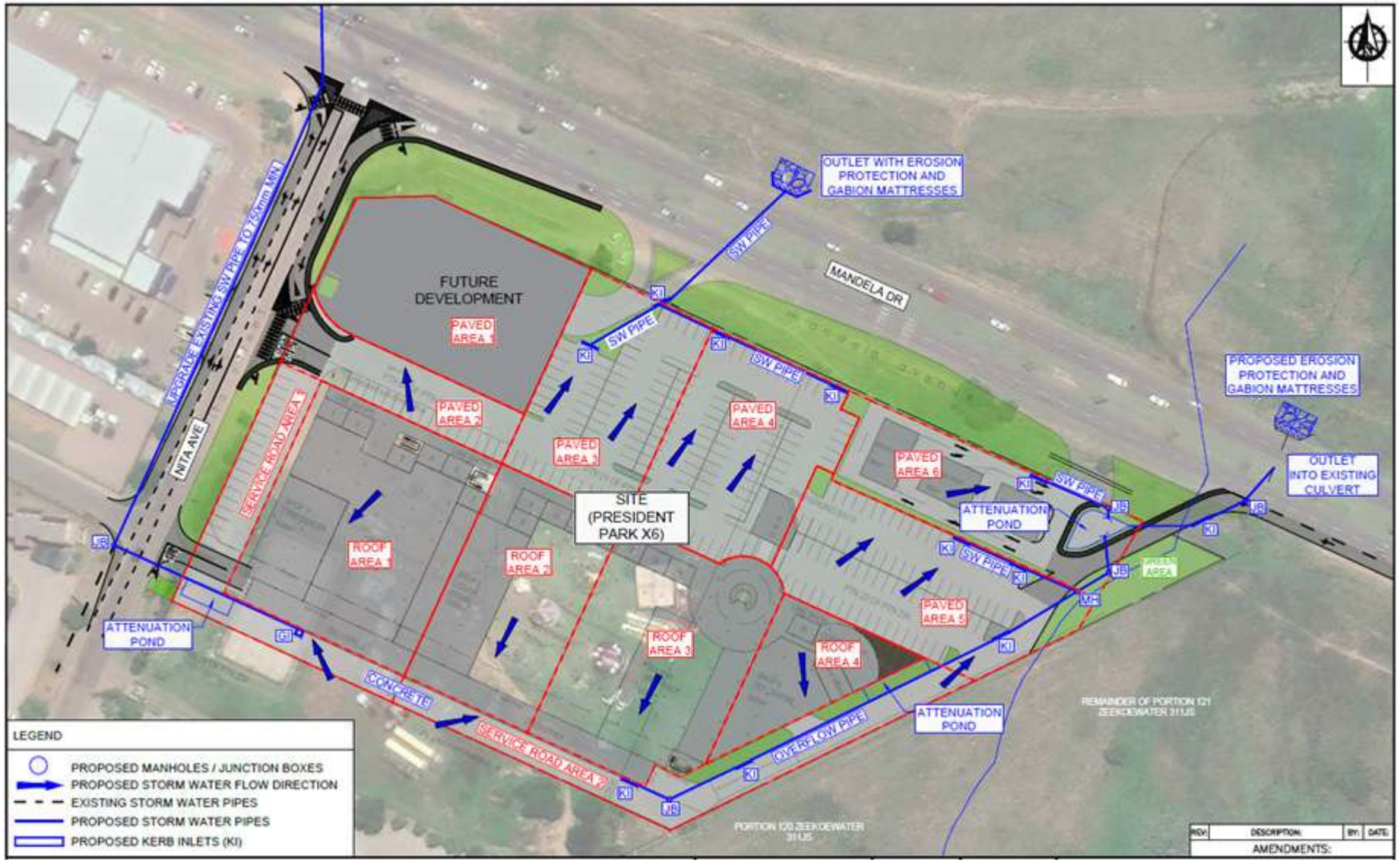


Figure 8.1: Proposed layout (Alternative 4) with storm water measures (Alternative 2) to be implemented (taken from Van Rooyen, 2021)

8.3 Development phases

The impact of the development has to be assessed in terms of the following development phases:

- **Planning and design phase**
- **Construction phase**
- **Operational phase**
- **Decommissioning phase**

8.3.1 Planning and design phase

The planning and design phase involved mostly office work and site surveys with regards to the design of the layout plan, the Basic Assessment Report and the specialist studies. It also involves obtaining the necessary authorisations for the said development.

No actual construction took place on site. Thus, no impacts are associated with the planning and design phase.

8.3.2 Construction phase

The construction of the retail centre and associated infrastructure would involve the pegging of the stand, installation of services and construction of buildings and parking area (Figure 8.1).

This would involve the following:

- Fencing of the site;
- Clearing and removal of waste (including building material, etc.) on site;
- Clearing of the remaining vegetation and topsoil;
- Levelling of the area;
- Excavation of trenches for foundations and services;
- Installation and connection of services;
- Laying of the required foundations;
- Building of the outer structures;
- Installation of the required internal fittings;
- Construction of access roads;
- Paving of the parking area;
- Rehabilitation of the disturbed areas (i.e. landscaping).

Section 8.5 provides details with regards to potential impacts identified during the construction phase.

8.3.3 Operational phase

The operational phase would involve the utilisation of the various buildings and infrastructure (including parking area) associated with the proposed retail centre.

Section 8.5 provides details with regards to potential impacts identified during the operational phase.

8.3.4 Decommissioning phase

It is anticipated that the infrastructure will remain on site and that there will be no decommissioning phase.

The decommissioning phase will not be discussed in detail. It is recommended that at the time of decommissioning, a specific Environmental

Management Programme (EMPr) be compiled which specifically addresses this phase. This EMPr would have to address issues such as the removal of building rubble and the rehabilitation of the site. Soil conservation measures would also have to be implemented.

Section 8.5 indicates some of the potential impacts identified during the decommissioning phase.

8.4 Approach and methodology

This section presents the proposed approach to assessing the potential impacts, with the aim of determining the significance of these impacts. The impact will be determined for each aspect of the environment with and without the implementation of mitigation measures. This allows for a prediction of how the impact can be managed or mitigated. The evaluation of impacts is conducted in terms of the following criteria:

- **Nature of impact (i.e. description of the impact)**

- **Extent (i.e. spatial scope or geographical extent of the impact to the receiving environment)**

Site	Effect limited to the site and its immediate surroundings
Local	Effect limited to within 3-5 km of the site
Regional	Effect will have an impact on a regional scale

- **Duration (i.e. length of permanence of the impact. In other words, how long will the impact last)**

Short	Effect lasts for a period 0 to 5 years
Medium	Effect continues for a period between 5 and 10 years
Long	Effect will cease after the operational life of the activity either because of natural process or by human intervention
Permanent	Where mitigation either by natural process or by human intervention will not occur in such a way or in such a time span that the impact can be considered transient

- **Probability (i.e. likelihood that the impact will occur)**

Improbable	Less than 33% chance of occurrence
Probable	Between 33 and 66% chance of occurrence
Highly probable	Greater than 66% chance of occurrence
Definite	Will occur regardless of any prevention measures

- **Significance/intensity of impact (i.e. degree of alteration to the affected receiving environment)**

Low	Where the impact will have a relatively small effect on the environment and will not have an influence on the decision
Medium	Where the impact can have an influence on the environment and the decision and should be mitigated
High	Where the impact definitely has an impact on the environment and the decision regardless of any possible mitigation

- **Status (i.e. whether the impact will have a positive (beneficial) or negative (detrimental) effect on the receiving environment)**

Positive	Impact will be beneficial to the environment
Negative	Impact will not be beneficial to the environment
Neutral	Positive and negative impact

- **Reversibility (i.e. whether the impact can be reversed or not)**

Reversible	Impact is reversible without incurring significant time and cost
Reversible (costly)	Impact is reversible only by incurring significant time and cost
Irreversible	Impact is irreversible

8.5 Description of potential impacts

The following section provides an indication of the environmental features that will be impacted (directly and indirectly) during the construction, operational and decommissioning phases of the proposed project.

It must be noted that many of the potential negative consequences can be mitigated successfully. It is however, necessary to make a thorough assessment of all possible impacts in order to ensure that environmental considerations are taken into account, in a balanced way, as far as possible, supporting the aim of creating a healthy and pleasant environment.

Please note: Only the most important mitigation measures associated with identified impacts are indicated in this section. The Environmental Management Programme Report (EMPr; included in Section 9 of this report) provides a comprehensive description of the various mitigation and management measures proposed to ensure minimal impact on the environment.

8.5.1 Topography

As indicated in Section 5.5, the topography of the proposed site has already been impacted by past excavation, backfilling and levelling activities. This has resulted in a terraced topography as indicated in Figure 5.8. Other impacts on the topography include the presence of the sports facility, excavation of trenches, construction of berms, building rubble/soil stockpiles, roads, etc.

Although the topography of the site has been altered, Hansmeyer (2010) indicated that the potential for slope failure is minimal (small) and that the gradient of the site is suitable for development.

Construction phase

In general, construction activities (e.g. removal of vegetation, building rubble, sloping of the site, construction of buildings, etc.) would have a direct impact on the topography of the proposed site although already impacted as indicated.

Operational phase

Direct impact on topography will continue in terms of the presence of the buildings (topographical highs) within an area where the topography has

already been impacted as a result of past activities as well as the presence of surrounding businesses, roads, etc.

IMPACT ON TOPOGRAPHY					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Low Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Highly probable	Low Negative	Low Negative	Reversible

8.5.2 Geology

As indicated in Section 5.4, the site is underlain by rhyolite of the Selons River Formation, Rooiberg Group. Material was excavated from site for the construction of Mandela Drive and other streets in eMalahleni. According to Hansmeyer (2010), the deeper section of the borrow pit was most probably more than 2m below surface. The borrow pit was subsequently backfilled with building rubble and sand and levelled. The geology of the majority of the site has thus been impacted.

As indicated in Section 5.4.2, Hansmeyer (2010) demarcated two (2) geotechnical zones namely, Geotechnical Zones 2B and 2C and indicated that the proposed site can be development subject to the implementation of mitigation measures as recommended.

Construction phase

According to Hansmeyer (2010), the majority of the site comprises highly compressible founding material. Structures built within Geotechnical Zone 2B will require deep foundations.

Within Geotechnical Zone 2C, the imported fill material must be replaced by inert material or the fill material must be cut to spoil. Approximately 25 000m^3 of fill material will be required. According to Hansmeyer (2010), unstable sidewall conditions can be expected within this geotechnical zone.

In both Geotechnical Zones, the mitigation measures recommended by Hansmeyer (2010) must be implemented in order to avoid any impact on the structures built.

The direct impact on the underlying geology (rhyolite of the Selons River Formation) will thus depend on the depth of excavations required for the foundations and service trenches.

Operational phase

During the operational phase, the buildings and associated infrastructure could continue to be impacted if the mitigation measures recommended by Hansmeyer (2010) are not implemented during the construction phase.

IMPACT OF GEOLOGY/GEOTECHNICAL ASPECTS					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Permanent	Probable	Medium Negative	Low Negative	Irreversible
OPERATIONAL PHASE					
Site	Permanent	Probable	Medium Negative	Low Negative	Irreversible

Proposed mitigation:

- *The mitigation measures recommended by Hansmeyer (2010) to be implemented as part of the construction phase.*

8.5.3 Soil

Venter (2020b) indicated that most of the site (i.e. the levelled area) falls within the Technosol group and more particularly the Johannesburg soil form (i.e. soil profiles covered by concrete structures, cement and waste materials including building gravel). This soil form is not suitable for agricultural purposes.

The north western corner of the site falls within the Anthrosol group and more particularly, the Grabouw soil form which may represent the original soil profile (but with varying degrees of disturbance).

According to Venter (2020b), no hydric (wetland) soil forms are present on site.

A) Loss of arable land

None. The development of the proposed site would not impact on arable land as most of the site is covered by the Johannesburg soil form (i.e. soil profiles covered by concrete structures, cement and waste materials including building gravel) which is not suitable for agricultural purposes.

B) Disturbance of soil profiles

Construction phase

During the construction phase, any remaining soil on site will be impacted in terms of soil structure, nutritional and chemical values when the vegetation is removed and the area is levelled and compacted. The impact is however, considered low due to the transformed nature of the soil.

Operational phase

Direct impact on soil i.t.o. soil structure, nutritional and chemical values and soil compaction will continue due to the presence of the buildings and parking areas.

DISTURBANCE OF SOIL PROFILES					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Definite	Low Negative	Low Negative	Irreversible
OPERATIONAL PHASE					
Site	Long	Definite	Low Negative	Low Negative	Irreversible

C) Increase in erosion and sedimentation

Construction phase

The clearing of vegetation and changes to the topography during construction (i.e. excavations, levelling of the site, construction of buildings and parking area) would result in changed runoff patterns and an increased risk of soil erosion and sedimentation if mitigation measures are not implemented. This could indirectly impact on the adjacent roads (Nita Avenue and Mandela Drive), the existing storm water infrastructure and the downstream Seep Wetland in terms of erosion and sedimentation.

Operational phase

The presence of impermeable surfaces (i.e. buildings and parking area) would impact on the surface water runoff patterns (volume, intensity, infiltration) on site, which could lead to an increased risk of soil erosion if storm water management measures were not implemented during the construction phase and are not maintained during the operational phase. This could indirectly impact on the adjacent roads (Nita Avenue and Mandela Drive), the existing storm water infrastructure and the downstream Seep Wetland.

INCREASE IN EROSION AND SEDIMENTATION					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Highly probable	Medium Negative	Low Negative	Reversible

Proposed mitigation:

- *The mitigation measures in Section 9 (EMP) with regards to storm water management (including the implementation of the storm water management plan providing for attenuation of storm water) must be implemented during all phases of the development.*
- *Monitor for erosion and intervene and/or rehabilitate where necessary.*

D) Risk of soil pollution

Construction phase

The backfilling of the borrow pit with concrete structures, cement and waste materials (including building gravel) and the various onsite activities (e.g. circus, merry-go-round, etc.) could have resulted in soil pollution.

During the construction phase, the imported fill material present in Geotechnical Zone 2C must be removed and replaced within inert material or the fill material must be cut to spoil. The removal of this fill material could result in soil pollution if the said material is stockpiled and not immediately removed from site.

In addition, the remaining soil on site could be polluted if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills, waste management measures are not implemented and proper ablution and sanitation facilities are not provided for the site workers to use on site.

Operational phase

Soil pollution could occur if waste is not collected by the ELM and disposed of at the registered Leeuwpoort Waste Disposal Site, and if the sewerage system (to be connected to the ELM sewer network) does not have sufficient capacity or was not properly installed resulting in sewage overflowing from the manholes.

RISK OF SOIL POLLUTION					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Probable	Medium Negative	Low Negative	Reversible

Proposed mitigation:

- *The waste management measures indicated in Section 9 (EMP) to be implemented during all phases of the development.*

8.5.4 Land use and sense of place

The proposed site is located within an established urban area and within the urban edge of eMalahleni.

According to the eMalahleni Spatial Development Framework (2015), Mandela Drive was identified as one of the activity spines/corridors where non-residential uses would be allowed in order to optimally utilize the visual exposure from the high traffic volumes along this road.

Construction phase

The proposed site (zoned for business purposes) is currently vacant and in a state of neglect. It is used on occasion for recreational activities (basketball court, circus, etc.).

Once developed, the property will no longer be available for recreational activities but should be well managed and no longer an eyesore to the general public.

Operational phase

The proposed retail development adjacent to Mandela Drive and Nita Avenue would be highly visible and would attract business. It therefore fits into the development plans of the eMalahleni Local Municipality and should not impact on the sense of place of the area.

IMPACT ON LAND USE AND SENSE OF PLACE					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Definite	Low Neutral	Low Neutral	N/A
OPERATIONAL PHASE					
Site	Long	Definite	Medium Positive	Medium Positive	N/A

8.5.5 Natural vegetation and animal life

As indicated in Section 5.7.2, the vegetation of the site is highly modified/transformed (due to past disturbances on site), with low species diversity. It no longer resembles the Rand Highveld Grassland vegetation type. No threatened plant species were recorded. Venter (2020a) indicated that the vegetation on site is of low sensitivity.

The highly modified/transformed nature of the vegetation and the location of the site within an urban environment and within close proximity to residential areas (and domestic animals) provides limited (artificial) habitat for animal species (i.e. smaller fauna species).

A) Destruction/loss of natural vegetation

Construction phase
The construction activities would impact on ±3ha of highly disturbed vegetation consisting mainly of the Modified Grassland vegetation unit (Venter, 2020a). The Artificial Ponding, Artificial Wetland and Transformed vegetation units would also be impacted upon.

The removal of the said vegation would also result in the removal of invader plants which would have a positive impact on the natural environment and stop the spread thereof into the surrounding area.

Operational phase
No direct impact since no more vegetation would be removed. Alien vegetation could however, establish on site and spread to the surrounding area if alien plants are utilized in the gardens.

DESTRUCTION/LOSS OF NATURAL VEGETATION					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Definite	Low Neutral	Low Neutral	N/A
OPERATIONAL PHASE					
Site	Long	Probable	Low Negative	Low Negative	Reversible

B) Impact on animal life

Construction phase
The proposed development would impact on the smaller fauna species noted on site in terms of the destruction and loss of the Modified Grassland vegetation unit that could provide potential habitat. During construction, the species would either migrate out of the area to the open space areas located north of Mandela Drive and east of the site or in a worst-case scenario could be killed.

The development would not impact on the existing culvert underneath Mandela Drive that acts as a corridor for smaller species moving between the open space areas located north of Mandela Drive and east of the site.

Operational phase
No further direct impact on animal life is expected as no further construction activities will take place.

The landscaping of the site could attract a number of bird species as well as smaller species such as reptiles, amphibians, etc. New habitats for animals could therefore be created.

IMPACT ON ANIMAL LIFE					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
None	None	None	None	None	N/A

Proposed mitigation:

- *Should any animals (e.g. reptiles or mammals) be found during the construction phase, a specialist should be contacted immediately to ensure the safe removal of the specimen.*

C) Animal Species of Conservation Concern

Construction phase

The proposed development will impact on the Artificial ponding area and the vehicle tracks where a Giant Bullfrog as well as eggs and tadpoles were discovered in January/February 2021. As indicated, these artificial depressions dried up within days and all tadpoles died before metamorphosis could be completed indicating that the site does not provide suitable habitat for the long-term survival of the said Giant Bullfrog population.

In the short term, mitigation measures as recommended by the specialists should be implemented.

IMPACT ON ANIMAL SPECIES OF CONSERVATION CONCERN					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	High Negative	Medium Negative	Reversible
OPERATIONAL PHASE					
None	None	None	None	None	N/A

Proposed mitigation:

- *The depression/artificial ponding area in the southern portion of the site should be left intact for as long as possible to act as a temporary refuge for the Giant Bullfrogs that might be present at or may return to the area in following seasons.*
- *Should Giant Bullfrogs be found during the construction phase, the MTPA must be notified and the bullfrogs must be removed by the appointed ECO and the MTPA Herpetologist to be relocated to the nearest suitable bullfrog habitat (i.e. Witbank Nature Reserve).*

8.5.6 Surface water (including wetlands and sensitive landscapes)

A) Direct impact on surface water environments (including wetlands)

Construction and Operational phases

None. The development of the proposed site will not impact directly on any surface water environments (streams/rivers) or wetlands (Venter, 2020b).

The closest surface water environment is a Seep Wetland located east of the site. The Seep Wetland unit is located outside of the site with the 28m wetland buffer extending into the north eastern corner of the site. The planned access road and the traffic circle in the north eastern corner of the site were moved outside of the buffer zone as indicated in Layout Plan 4 (Figure 8.1). The implementation of Layout Plan 4 (Figure 8.1) would therefore not impact on this wetland buffer since all infrastructure would be located outside of the said buffer zone.

B) Impact on surface water runoff velocity

Construction phase
The clearing of vegetation and changes to the topography during construction (i.e. excavations, levelling of the site, construction of buildings and parking area) would result in changed runoff patterns (volume, intensity, infiltration) and an increased risk of soil erosion and sedimentation if mitigation measures are not implemented. This could indirectly impact on the adjacent roads (Nita Avenue and Mandela Drive), the existing storm water infrastructure and the downstream Seep Wetland in terms of erosion and sedimentation.

Operational phase
The presence of impermeable surfaces (i.e. buildings and parking area) would impact on the surface water runoff patterns (volume, intensity, infiltration) on site, which could lead to an increased risk of soil erosion if storm water management measures were not implemented during the construction phase and are not maintained during the operational phase. This could indirectly impact on the adjacent roads (Nita Avenue and Mandela Drive), the existing storm water infrastructure and the downstream Seep Wetland in terms of erosion and flowing during extreme rainfall events.

The implementation of the storm water management plan providing for attenuation of storm water as indicated in Figure 8.1 would reduce this potential impact.

IMPACT ON SURFACE WATER RUNOFF VELOCITY (EROSION, SEDIMENTATION, FLOODING)					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Highly probable	Medium Negative	Low Negative	Reversible

Proposed mitigation:

- *The storm water management plan providing for the attenuation of storm water as indicated in Figure 8.1 must be implemented.*
- *The mitigation measures in Section 9 (EMP) with regards to storm water management must be implemented during all phases of the development.*
- *Monitor for erosion and intervene and/or rehabilitate where necessary.*

C) Impact on surface water runoff quality

Construction phase
Surface water runoff may be polluted if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills, waste management measures are not implemented and proper ablution and sanitation facilities are not provided for the site workers to use on site.

Operational phase
Indirect pollution of surface water runoff could take place if waste is not collected by the ELM and disposed of at the registered Leeuwpoort Waste Disposal Site, and if the sewerage system (to be connected to the ELM sewer network) does not have sufficient capacity or was not properly installed

resulting in sewage overflowing from the manholes. This could ultimately impact on the Seep Wetland located adjacent and downstream of the site.

IMPACT ON SURFACE WATER RUNOFF QUALITY					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Probable	Medium Negative	Low Negative	Reversible

Proposed mitigation:

- *The waste management measures as indicated in Section 9 (EMP) to be implemented during all phases of the development.*

8.5.7 Groundwater

A) Direct impact on groundwater

Construction phase

During the construction phase, the imported fill material within Geotechnical Zone 2C must be removed and replaced with inert material or the fill material must be cut to spoil. The removal of this material could impact on the perched water table (between 1.8m and 2.5m below surface) which is as a result of surface water runoff from the higher lying areas draining towards the site and accumulating in the backfilled area.

Unstable sidewall conditions can also be expected within this area which could result in construction problems and delays. Mitigation measures as recommended by Hansmeyer (2010) must be implemented in order to prevent impact on the structures/buildings.

Operational phase

During the operational phase, the impact on the perched groundwater table and the structures/services will continue if the necessary mitigation measures as recommended by Hansmeyer (2010) and the storm water management plan providing for the attenuation of storm water (Figure 8.1) were not implemented during construction.

DIRECT IMPACT ON GROUNDWATER					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Highly probable	Medium Negative	Low Negative	Reversible

Proposed mitigation:

- *The mitigation measures recommended by Hansmeyer (2010) to be implemented as part of the construction phase.*
- *The storm water management plan providing for the attenuation of storm water as indicated in Figure 8.1 must be implemented.*

B) Indirect impact on groundwater quality

Construction phase
During construction, indirect pollution of the groundwater could take place if the construction vehicles are not maintained/repaired resulting in oil leaks and fuel spills, proper ablution and sanitation facilities are not provided for the site workers to use on site and proper waste management measures are not implemented.

Operational phase
Indirect pollution of the groundwater could take place over time if proper waste management measures are not implemented and the sewerage system does not have sufficient capacity and is not maintained.

INDIRECT IMPACT ON GROUNDWATER QUALITY					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Improbable	Low Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Improbable	Low Negative	Low Negative	Reversible

C) Impact of groundwater abstraction

Construction and operational phases
None. No groundwater abstraction will take place. The development will obtain water from the eMalahleni Local Municipality (ELM) by connecting to the existing municipal water reticulation network.

8.5.8 Sites of archaeological and cultural interest

A) Impact on archaeological/cultural sites

Construction and operational phases
None. Van Vollenhoven *et. al.* (2020) indicated that no sites of cultural heritage significance were identified within the proposed site and that the development may therefore proceed (see Section 5.13.1 for further details).

B) Impact on palaeontology

Construction phase
None. As indicated in Section 5.13.2, the proposed site is underlain by volcanic rocks of the Selonsrivier Formation, Rooiberg Group, which has a 'Low' palaeontological sensitivity with no fossils having been recorded (Fourie, 2020). Based on the findings of the desktop study, Fourie (2020) raised no objection to the proposed development and indicated that the development may go ahead.

Operational phase
The operational activities will have no direct or indirect impact on the palaeontology of the site as no further construction will take place.

8.5.9 Air quality

As indicated in Section 5.11, the eMalahleni area forms part of a national air pollution hotspot known as the Highveld Priority Area. The proposed site is thus located within this air quality hot spot where the air quality is

predominately governed by the various industrial and mining activities in and around eMalahleni.

A) Impacts in terms of dust

Construction phase
Dust generation and vehicle emissions due to construction activities and use of heavy machinery could impact on site workers, patrons of the Portuguese Club and Casa Portuguesa Restaurant, adjacent landowners/users (e.g. Nissan, Highveld View Estate, Indlela Lodge) and road users utilising Nita Avenue and Mandela Drive. The extent of the impact would depend on the time of year, wind direction (which is predominantly easterly and northerly winds), wind velocity and mitigation measures in place.

Operational phase
During the operational phase, no direct impact on the air quality is anticipated due to the development being supplied with electricity. In addition, no light industrial and/or noxious (scheduled processes) industries would be permitted on the business stands.

The internal roads would be paved and/or tarred and therefore no dust generation will take place. However, vehicle emissions could impact on the air quality of the site and immediate surroundings due to the increased number of vehicles utilizing the area.

IMPACT IN TERMS OF DUST					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Highly probable	Low Negative	Low Negative	Reversible

Proposed mitigation:

- *Dust suppression measures to be implemented on site during the construction phase (see Section 9 (EMP) for details).*

B) Impacts in terms of odours

Construction phase
During construction, the air quality of the site and surroundings could be impacted in terms of odours if the chemical toilets used are not maintained and proper waste management measures are not implemented.

Operational phase
During the operational phase, the air quality of the site and surroundings could be impacted if the sewerage system (to be connected to the existing ELM sewer network) does not have sufficient capacity or was not installed properly resulting in sewage overflowing from the manholes. The air quality could also be impacted if proper waste management measures are not implemented and the waste is not removed by the ELM and disposed of at the registered Leeuwpoort Waste Disposal Site (on a regular basis).

IMPACT IN TERMS OF ODOURS					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Probable	Medium Negative	Low Negative	Reversible

Proposed mitigation:

- *The waste management measures as indicated in Section 9 (EMP) to be implemented during all phases of the development.*
- *The sewerage infrastructure to be properly installed and well maintained.*

8.5.10 Noise

As indicated in Section 5.12, the ambient noise of the proposed site and surrounding area is predominantly governed by traffic utilizing Nita Avenue/Mandela Drive/nearby N4 national road; business, recreational, institutional and residential activities taking place in the surrounding area; blasting at the nearby Afrisam Aggregates and Ready-mix quarry/facility.

Construction phase

Heavy machinery used during the construction phase will contribute to increased ambient noise levels in the immediate area, which could impact on the construction workers, residents living at Highveld View Estate, adjacent businesses (e.g. Nissan Dealership, Portuguese Club, Casa Portuguesa Restaurant, etc.) as well as road users utilising Nita Avenue and Mandela Drive. Construction noise cannot really be mitigated, but would be of short duration.

Operational phase

Some operational noise would be created in the form of increased numbers of people and vehicles visiting the retail centre. The impact is however, expected to be insignificant since the proposed site is located within an already developed area.

IMPACT IN TERMS OF NOISE					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Medium Negative	Medium Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Highly probable	Low Negative	Low Negative	Reversible

Proposed mitigation:

- *The mitigation measures in terms of noise as indicated in Section 9 (EMP) to be implemented.*

8.5.11 Visual aspects

As indicated in Section 5.15, the site is highly visible from Mandela Drive, Nita Avenue and all the adjacent properties (e.g. Nissan Dealership, Highveld View Estate, Casa Portuguesa restaurant, open veld, etc.) and to an extent from the Highveld Mall.

Construction phase
The proposed site is currently vacant and in a state of neglect. Once developed, the property should be well managed and no longer an eyesore to the general public.

Construction activities would be highly visible from Mandela Drive, Nita Avenue and all the adjacent properties (e.g. Nissan Dealership, Highveld View Estate, Casa Portuguesa restaurant, open veld, etc.) and to an extent from the Highveld Mall.

Operational phase
Residents of Highveld View Estate, patrons visiting the Portuguese Club and the Casa Portuguesa Restaurant, clients visiting the Nissan Dealership as well as road users utilising Mandela Drive and Nita Avenue could be negatively impacted in terms of visual aspects if the retail centre is not maintained and is not kept neat and tidy.

IMPACT IN TERMS OF VISUAL ASPECTS					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Low Neutral	Low Neutral	Reversible
OPERATIONAL PHASE					
Site	Long	Probable	Low Negative	Low Negative	Reversible

8.5.12 Traffic
As indicated in Figure 8.1, access to the site will be obtained from Mandela Drive (left-slip only) and two access points in Nita Avenue.

Construction phase
All construction activities will take place on site and will not directly impact on traffic utilising the surrounding road network (i.e. Nita Avenue and Mandela Drive).

During the construction phase, the delivery of building material and the removal of the imported fill material from site could lead to a slight increase in traffic along Nita Avenue and Mandela Drive.

The construction of the new access road from Mandela Avenue (left-slip only, Figure 8.1) and the two access points from Nita Avenue (Figure 8.1) could impact on road users/motorists. The impact is however, expected to be low and short term.

Operational phase
The operation of the retail centre would result in an increase in cars, buses and taxis in the area. According to Van Rooyen (2020), it is estimated that the proposed retail development will generate (as a worst case) a total of 816 vph (total 'In' and 'Out') during the Friday Afternoon (PM) and 1082 vph (total 'In' and 'Out') during the Saturday Morning (AM) peak hours.

Upgrades are required at the Mandela Drive/Nita Avenue intersection. Road users along Mandela Drive and Nita Avenue could be impacted in terms of long delays should the required upgrades and recommendations of Van Rooyen (2020) not be implemented.

In addition, road improvements are also planned by SANRAL for the N4 on-and-off ramps. Van Rooyen (2020) indicated that the N4/Mandela Drive intersections will operate at acceptable levels with the additional development traffic if the proposed upgrades to the on-and-off ramps are implemented.

IMPACT IN TERMS OF TRAFFIC					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Highly probable	Medium Negative	Low Negative	Reversible

8.5.13 Interested and affected parties

The proposed development site belongs to the project applicant and therefore no other landowner will be directly impacted in terms of the development of the said site (i.e. in the short term and/or long term).

A) Positive impacts on Interested and Affected Parties (I&APs)

Construction and operational phases

The proposed development could have the following positive impacts on I&APs:

- During the construction phase, the site will be cleared of all waste, etc. thus improving the visual aspect of the site and reducing the current health and safety risk.
- Business opportunities would be provided in the form of new shops/restaurants/offices.
- The proposed development would lead to employment opportunities during the construction and operational phases.
- The site is located adjacent to Highveld View Estate and near Del Judor X4 and thus within walking distance for most residents.
- The development and its various amenities would be easily accessible to people travelling along Mandela Drive.
- Upgrading of the road intersections (Mandela Drive/Nita Avenue) would improve the current traffic situation in the area which would benefit all I&APs utilising the said roads.

POSITIVE IMPACTS ON I&APs					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Medium Positive	Medium Positive	N/A
OPERATIONAL PHASE					
Site	Long	Highly probable	Medium Positive	Medium Positive	N/A

B) Potential negative impacts on Interested and Affected Parties (I&APs)

Construction and operational phases

The proposed development could have the following negative impacts on I&APs:

- During the construction phase, contractors working on site could be directly impacted upon if the necessary safety and occupational health measures are not adhered to.

- The connection of services (water, electricity, sewage) to the municipal infrastructure could impact on the residents of Del Judor X4 and the surrounding businesses.
- The construction of access roads to the site (i.e. from Nita Avenue and Mandela Drive) could impact on the road users.
- Road users could also be impacted should any services or storm water infrastructure be constructed across Nita Avenue and Mandela Drive.
- Residents of the surrounding area utilize the basketball court for recreational activities. This area will no longer be available once the site is developed.
- The site is utilized by the circus or merry-go-round and will no longer be available for this purpose.
- Other impacts in terms of the natural environment, noise, odours, visual, traffic, etc. are indicated in the preceding sections.

NEGATIVE IMPACTS ON I&APs					
CONSTRUCTION PHASE					
Extent	**Duration**	**Probability**	**Significance pre-mitigation**	**Significance post-mitigation**	**Reversibility**
Site	Short	Highly probable	Medium Negative	Low Negative	Reversible
OPERATIONAL PHASE					
Site	Long	Highly probable	Medium Negative	Low Negative	Reversible

Proposed mitigation:

- *All phases of development to be managed according to the Environmental Management Plan (Section 9 of this report).*

8.6 Cumulative impacts

Due to the disturbed nature and location of the site as well as the small scale of the proposed development, no significant cumulative impacts are expected in terms of the following: topography, geology, soil, land use, vegetation, animal life, surface water (including wetlands), groundwater, air quality, noise, sites of archaeological and cultural sensitivity.

The proposed development would add to the cumulative impact of traffic on Nita Avenue and Mandela Drive. Proper access points must be constructed and the intersections upgraded as indicated by Van Rooyen (2020) in order to prevent a potential impact on the general road user.

The proposed development together with all other developments in eMalahleni would impact on the services (e.g. water, sewage, electricity, roads, etc.) provided by the local municipality. Some upgrades in terms of the water pipelines, electrical infrastructure and storm water system are necessary before the development can be connected to these services. The eMalahleni Local Municipality must ensure that the required services can be provided and that there is sufficient capacity at the sewage works to cater for the additional development.

8.7 'No project' impacts

The 'No Project Option' is the alternative of not going ahead with the proposed development. The 'No Project Option' is only considered if it is

found that the development will have significant negative impacts on the environment, which cannot be mitigated or managed.

If the 'No Project Option' in terms of the proposed development was exercised, it could mean that:

- A prime development site would stay vacant and not be able to reach its full development potential benefitting the community of eMalahleni.
- The site would remain unkempt, posing a health and safety risk to residents living in the nearby residential area as well as eMalahleni as a whole.
- The eMalahleni Local Municipality would not be able to meets its goal of developing the said area in line with the Spatial Development Framework (2015).
- Potential business and employment opportunities for residents of the nearby residential area and eMalahleni as a whole would be lost.
- Other potential uses for the site would have to be investigated.
- The applicant could sell the property.

It is anticipated that this development will add to the development potential and economic growth of the area and provide the required retail services.

8.8 Concluding remarks

In view of the highly disturbed nature of the site, the proposed development of the site as per Layout Plan 4 (Figure 8.1) would have an overall low negative impact since all infrastructure would be located outside of the 28m wetland buffer associated with the adjacent Seep Wetland.

Medium negative impacts as a result of the proposed development of the site are anticipated in terms of geology/geotechnical aspects, soil, air quality, noise, traffic. These potential impacts can be reduced by implementing the mitigation measures as indicated in Section 9 (EMPr) of this report.

SECTION 9: ENVIRONMENTAL MANAGEMENT PROGRAMME

9.1 Definition and objectives

As indicated in Regulation 19(4) of the EIA Regulations, 2014 (as amended), an Environmental Management Programme (EMPr) must form part of the Basic Assessment Report.

The EMPr was compiled in accordance with Appendix 4 of the EIA Regulations, 2014 (as amended) as well as the Western Cape Guideline for Environmental Management Plans (Lochner, 2005).

According to the Western Cape Guideline, an Environmental Management Programme (EMPr) can be defined as:

> *An environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced.*

According to the EIA Regulations, 2014 (as amended), an EMPr must include-
(d) A description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed or mitigated as identified through the environmental impact assessment process for all phases of the development including -
(i) planning and design;
(ii) pre-construction and construction activities;
(iii) operation or undertaking of the activity;
(iv) rehabilitation of the environment; and
(v) closure, where relevant.

This section therefore provides an indication of the mitigation measures to be implemented by the site operator (and site workers) in order to reduce the potential impacts identified (see Section 8).

9.2 Contact details of Environmental Assessment Practitioner

An EMPr must include -
(a) details of-
(i) the EAP who prepared the environmental management programme; and
(ii) the expertise of that person to prepare an environmental management programme, including a curriculum vitae.

The contact details and expertise of the Environmental Assessment Practitioner who prepared the EMPr are provided in Section 2 of this Basic Assessment Report.

The applicant will be responsible for the implementation of the EMPr. The contact details are provided in Section 2 of this Basic Assessment Report.

9.3 Description of the proposed project

An EMPr must provide -
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.

A detailed description of the proposed development and aspects covered by the EMPr is provided in Section 3 and Section 7 of this Basic Assessment Report. Section 5 of this Basic Assessment Report provides a description of the biophysical environment of the site.

In summary, the following alternatives as indicated in Section 7.6 will be implemented:

Aspect	Description of alternative
Site	The development site will be located on Erven 20, 21 and 22 of President Park X6, eMalahleni.
Land use	A retail centre will be established on the said property.
Layout plan	Layout plan 4: All infrastructure located outside of the 28m buffer associated with the adjacent Seep Wetland. No provision made for a filling station (Figure 9.1).
Services	Water from eMalahleni Local Municipality. Will connect to existing water infrastructure of eMalahleni Local Municipality.
	Obtain electricity from eMalahleni Local Municipality.
	Connecting to existing sewer infrastructure of eMalahleni Local Municipality.
	Waste collected by the ELM and disposed of at the registered Leeuwpoort Waste Disposal Site.
	Connecting to the existing municipal storm water system of the eMalahleni Local Municipality and upgrading thereof with attenuation of storm water (Figure 9.1) at outlets.

Mitigation and management measures with regards to these alternatives are provided in Section 9.5.

9.4 Sensitivity mapping

An EMPr must provide -
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers.

Section 5 of this Basic Assessment Report provides a description of the biophysical environment of the site.

No sensitive landscapes are present on site. As indicated in Section 5, the site is highly transformed and comprises almost entirely of an old borrow pit that was backfilled with building rubble and soil. An Artificial Wetland area is present in the northern portion of the site and two Artificial Ponding areas are also present on site (Figure 9.1) but these areas do not represent wetland conditions. In addition, no hydromorphic soils were identified on site.

A Seep Wetland is present east of the site (Figure 9.1). A 28 m wetland buffer (Figure 9.1) associated with the said Seep Wetland must be implemented. The seep wetland extends across Mandela Drive and eventually becomes a Valley Bottom Wetland (Figure 9.1).

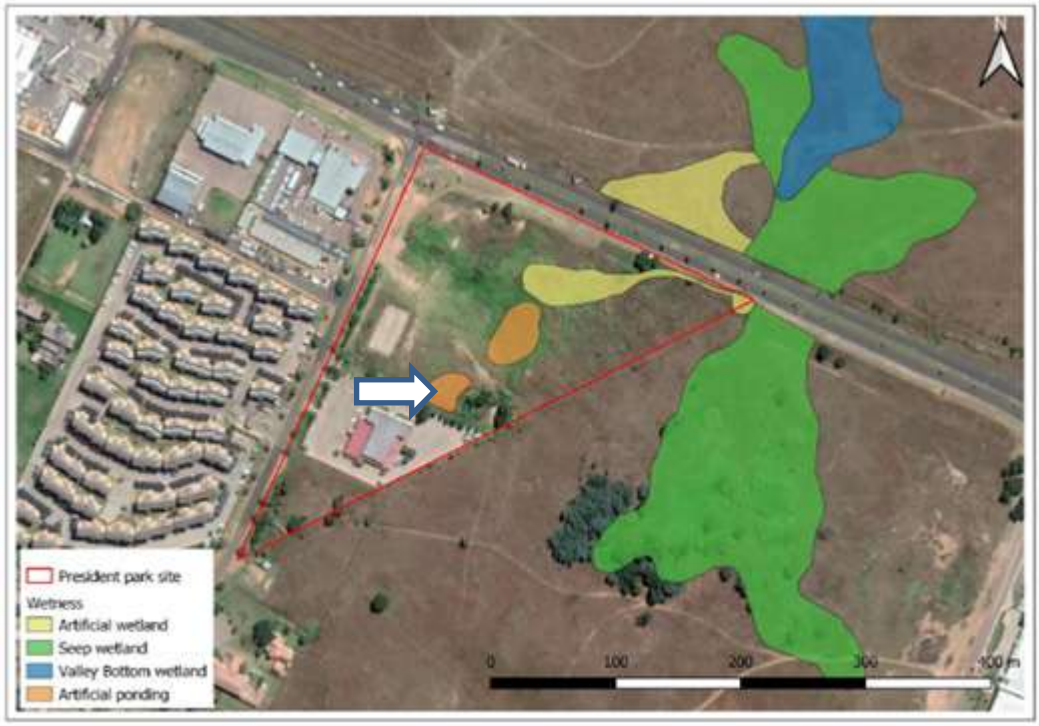


Figure 9.1: Site sensitivity (taken from Venter, 2020b)

9.5 Mitigation and management measures to be implemented

An EMPr must include -
(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to -
(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
(ii) comply with any prescribed environmental management standards or practices;
(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.

Before any construction can commence, the following permissions will be required:

- Environmental Authorisation in terms of the Environmental Impact Assessment Regulations, 2014 (as amended).

9.5.1 Construction site office

Impact management outcome:

1) *To ensure that an appropriate site is selected for the construction site office and that the construction site office is managed in an environmentally responsible manner with the least impact on the natural environment, site workers and adjacent landowners/users.*

Mitigation and management measures:

a. A suitable area within the site boundaries must be selected, demarcated and fenced for the construction site office. It is recommended that the construction site office be placed adjacent to Nita Avenue (e.g. area indicated for future development, Figure 8.1) where it will be easily accessible. This placement would also prevent contractors from accessing the site directly from Mandela Drive.
b. The construction site office may not be placed outside the boundaries of Erven 20, 21 and 22) or within the Artificial Ponding area located in the southern portion of the site (Figure 9.1).
c. No overnight accommodation may be provided at the construction site office.
d. Chemical toilets must be provided for use by the site workers. These must be serviced on a regular basis. No long drop toilets may be allowed.
e. Potable water must be made available to site workers.
f. Proper waste management facilities must be provided as part of the construction site office.
g. No dumping of any kind of waste (domestic, general, building rubble, etc.) may take place in the surrounding area. All waste must be removed to the licensed Leeuwpoort Waste Disposal Site.
h. No servicing of vehicles may take place on site.

9.5.2 Construction activities

General

Impact management outcome:

1) *To ensure that the activities that occur during the construction phase have the least impact on the natural environment, site workers and adjacent landowners/users*

Mitigation and management measures:

a. The applicant must comply with the conditions of the issued Environmental Authorisation.
b. Layout Plan 4 (Figure 8.1) must be implemented. All construction activities and infrastructure to be located outside of the 28m wetland buffer associated with the adjacent Seep Wetland.
c. Before any construction takes place, the following must be demarcated:
    - The 28m wetland associated with the adjacent Seep Wetland (Figure 8.1);
    - The depression/artificial ponding area in the southern portion of the site (Figure 9.1) must be demarcated and left intact to act as a temporary refuge for Giant Bullfrogs that might be present at or may return to the area.

    These areas must be demarcated as No-Go Areas and all site workers must be informed thereof.

d. Site Environmental Control Officer (SECO): Before construction commences, the applicant must appoint a person who will be responsible for the day-to-day implementation of the EMPr (including Environmental Awareness Training) and who will report to the site manager.
e. Environmental Control Officer/Auditor (ECO): The applicant must also appoint an ECO who will have the responsibility of monitoring and reporting on compliance (on a monthly basis) with the conditions of the Environmental Authorisation as well as monitoring and reporting on the implementation of the EMPr.
f. All construction activities must be limited to the said site. The said site must be properly demarcated/fenced and the footprint kept as small as possible.
g. No construction activities may take place within the road reserve of Mandela Drive without prior approval from the eMalahleni Local Municipality.
h. No stockpiling of building material/spoil or dumping of building waste may take place on adjacent properties (especially adjacent vacant properties of eMalahleni Local Municipality) or within adjacent Seep Wetland and its associated 28m wetland buffer.
i. Area to be cleared of vegetation at any one time must be limited in order to reduce the potential for dust generation during the windy months and erosion during the rainy season.
j. No removal of vegetation may take place outside of the site boundaries.
k. Dust suppression measures must be implemented during dry and windy periods. Water for dust suppression must be obtained from the ELM and not from any surface water sources (nearby rivers/streams).
l. For safety purposes, excavations must not be undertaken until such time as all required materials are available and services can be laid. Excavations should be closed as soon as is practically possible.
m. All construction activities must be limited to daylight hours in order to prevent any impact on the surrounding residents.
n. The adjacent landowners/users must be provided with contact numbers with whom complaints or concerns can be discussed.
o. Care must be taken not to impact on the ELM sewer pipeline located on the northern boundary of the site (i.e. within the Mandela Drive servitude) or the ELM water pipeline located on the western boundary of the site (i.e. within the Nita Avenue servitude).
p. The applicant must ensure that the necessary upgrades in terms of services (water, electricity) and traffic are done as recommended by the project engineers.
q. If any archaeological remains or historical material are exposed during the construction phase, construction at the affected area must cease immediately and the Provincial Heritage Resources Authority and SAHRA's APM Unit must be notified. In this regard, the applicant must take note of the requirements in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999).
r. The area should be demarcated in order to prevent any further work there until an investigation has been completed.
s. An archaeologist should be contacted immediately to provide advice on the matter. Should it be a minor issue, the archaeologist will decide on future action. Depending on the nature of the find, it may include a site visit.
t. If needed the necessary permit from SAHRA must be applied for. This must be done in conjunction with the appointed archaeologist.

u. The removal of the archaeological material may only be done by the archaeologist once approval has been granted by SAHRA and in accordance with any conditions stipulated by SAHRA.
v. Work on site will only continue after the archaeologist/SAHRA has agreed to such a matter.
w. If any graves are discovered during construction, the discovery must be reported to the SA Police Service and/or SAHRA or an archaeologist must be called in to handle the matter.
x. The appointed Site ECO must familiarise him- or herself with the Vryheid Formation and its fossils. Alternatively, a palaeontologist to be involved during the digging and excavation (ground breaking) phase of the development. If any palaeontological material is exposed (during digging, excavating, drilling or blasting) SAHRA must be notified, all construction activities must be stopped, a 30 m no-go barrier constructed and a palaeontologist called to determine proper mitigation measures. A protocol for finds and management plan are provided in Appendix 2 of Appendix 5 of the Basic Assessment Report.

Animal life

Impact management outcome:

1) To minimize the potential impact on animal life (especially Giant Bullfrogs) that may be present on site.

Mitigation and management measures:

a. Before any construction takes place, the depression/artificial ponding are in the southern portion of the site (Figure 9.1) must be demarcated and left intact to act as a temporary refuge for Giant Bullfrogs that might be present at or may return to the area.
b. This area must be demarcated as a No-Go Area and not developed for as long as possible.
c. Commence with clearing of vegetation from the western side and progressively continue in an easterly direction to provide mobile fauna (e.g. birds and hare, when present) with an opportunity to leave the site and move into the vacant land to the east without becoming isolated or threatened (e.g. mortalities) by earthmoving equipment.
d. Should Giant Bullfrogs be found during the construction phase, the MTPA must be notified and the bullfrogs must be removed by the appointed ECO and the MTPA Herpetologist to be relocated to the nearest suitable bullfrog habitat (i.e. Witbank Nature Reserve).
e. Should any animals (e.g. reptiles or mammals) be found during the construction phase, a specialist should be contacted immediately to ensure the safe removal of the specimen.
f. All site workers/contractors must be informed that no poaching/trapping of animals will be allowed on the vacant property east and north of the site.

Geotechnical recommendations

Impact management outcome:

1) To ensure that the buildings are not impacted upon by taking into account the geotechnical aspects of the site as recommended by Hansmeyer (2010).

Mitigation and management measures:

a. Foundations of structures in Geotechnical Zone 2B must be founded on the highly to moderately weathered Selons River rhyolite at an average depth of 1.5m up to 2m. If this is not done, settlements exceeding 50mm could be expected leading to major modifications to construction (Hansmeyer, 2010).
b. Adequate subsurface drainage (cut-off trenches) must be installed in Geotechnical Zone 2B (Hansmeyer, 2010).
c. Within Geotechnical Zone 2C, the imported fill material must be replaced by inert material or the fill material must to be cut to spoil. Approximately 25 000m^3 of fill material will be required (Hansmeyer, 2010). An area within the site boundaries must be demarcated for the temporary stockpiling of this material before removal from site.
d. According to Hansmeyer (2010), unstable sidewall conditions can be expected within Geotechnical Zone 2C. Mitigation measures in this regard will have to be implemented in order to avoid any impact on site workers or structures.
e. At the time of construction, a competent person must inspect all foundation excavations to ensure that the materials are adequate for the proposed structures and that they adhere to the geotechnical recommendations (Hansmeyer, 2010).
f. Excavated materials to be stockpiled for future use and should be thoroughly tested for their intended applications (e.g. impermeable backfill/pavement layers for the access and internal roads, etc.) (Hansmeyer, 2010). An area within the site boundaries must be demarcated for temporary stockpiling of this material.
g. The placement of engineered fill must be controlled with suitable field tests to ensure that the required densities are achieved during compaction, and that the quality of the fill material (soil or rock) is within specification (Hansmeyer, 2010).

Management measures in terms of soil and storm water runoff

Impact management outcome:

1) *To ensure that activities that occur during the construction phase have the least impact on the soils in terms of soil quality, structure and erosion potential.*
2) *To reduce the potential impact of storm water drainage from the site (during the construction and operational phases) on the buildings and parking area, storm water infrastructure, adjacent roads and landowners/users and the downstream Seep Wetland in terms of soil erosion, sedimentation and flooding.*

a. During construction, appropriate soil conservation and storm water management measures to be provided in order to prevent soil erosion and loss of topsoil. Increased run-off during construction must be managed using contour berms and other suitable structures (e.g. geo-textile silt fences, gabions, placement of bales or the use of sandbags) to ensure flow velocities are reduced.
b. Sediment controls (e.g. geo-textile silt fences and silt traps) should be placed immediately downslope of the construction footprint to intercept sediment. The same measures should be put in place downslope of soil or materials stockpiles.
c. If soil erosion is noted, appropriate remediation measures must be implemented.
d. Storm water may not enter the Seep Wetland directly, it must be attenuated before exiting the storm water system. The stormwater must

be attenuated on site, prior to release into the natural system (Venter, 2020b).

e. Storm water may not be concentrated into any wetland areas. The water must be spread over a wide area (Venter, 2020b).
f. The storm water management plan providing for the attenuation of storm water (Van Rooyen, 2021; Figure 8.1) and consisting of the following must be implemented:
    - Kerb and Grid inlets to be placed strategically over the site in such a manner as to capture most of the storm water running along the paved/surfaced areas of the parking and service road areas towards the northern boundary of the site (natural flow direction).
    - Three (3) attenuation ponds to be placed as indicated in Figure 8.1 to allow for the attenuation of storm water on site.
    - The captured storm water from the roofs of the buildings to be captured by kerbed inlets to the south of the site and conveyed through pipes to the north (Figure 8.1).
    - The outlet structure north of Mandela Drive to be fitted with erosion protection (energy breakers) and gabion mattresses to minimise the effect of erosion at this outlet as a result of scouring and elevated flow velocities.
    - The remaining storm water to be discharged by means of the various green areas on site (i.e. gardens, etc.) as well as a green area in the eastern corner (i.e. the wetland buffer associated with the adjacent Seep Wetland area) as indicated in Figure 8.1.
    - The storm water pipe from the proposed attenuation pond to tie into the existing culvert below Mandela Drive (Figure 8.1) in order to drain the easternmost storm water on site. The outlet structure north of Mandela Drive to be fitted with erosion protection (energy breakers) and gabion mattresses to minimise the effect of erosion at this outlet as a result of scouring and elevated flow velocities.
g. Permeable paving blocks should be used as far as possible for the parking areas to promote the infiltration of water into the soil and to reduce stormwater runoff from the site. Total sealing of the surface must be avoided (Venter, 2020b).
h. The following additional measures should be implemented to ensure that the storm water management measures are functional and not causing flooding of the surrounding roads or properties: debri and rubbish to be removed from kerb inlets and conduits during routine inspections; sediment to be removed especially after the first couple of month of installation as un-surfaced areas contribute a lot of sand/debri; stone pitching or gabion work to be repaired after major flooding; check on structural integrity of kerb inlets; damaged kerb inlets could lead to uncontrolled erosion downstream.

<u>Management measures in terms of waste</u>

Impact management outcome:

1) *To ensure the proper storage, management and disposal of waste during the construction phase.*
2) *To reduce potential soil, surface water and groundwater pollution as a result of waste management activities during construction.*

<u>Mitigation and management measures:</u>

a. Proper waste management measures to be implemented on site.
b. The applicant/contractor must ensure that all site workers receive appropriate training with regards to waste management measures to be implemented for the said site.

c. Waste skips/bins to be provided for placement of general waste, building rubble, etc.
d. Waste skips to be covered with a net to prevent windblown waste.
e. Hazardous waste to be separated from general waste, stored separately in appropriate containers and disposed of at a licensed hazardous waste disposal facility or certified recycling facility. No hazardous substance to be disposed of on site or in the surrounding area.
f. The waste collection area must be kept clean and tidy at all times. This area should not be littered with waste lying outside of the waste bins/skips. Site workers to be instructed on a daily basis (at end of the day) to collect windblown rubbish which may collect on site and in the adjacent area. This will assist with the overall visual appearance of the site.
g. An area within the site boundaries must be demarcated for the temporary stockpiling of the imported infill material (could include waste material) that must be removed from Geotechnical Zone 2 C before removal from site. It should be determined if any of this material could be used as fill material with regards to the new construction taking place.
h. No waste to be burnt, buried or dumped on site or the surrounding area.
i. Waste skips/bins to be emptied on a regular basis and the waste disposed of at the licensed Leeuwpoort Waste Disposal Site.
j. Proper bunded storage facilities must be provided for the storage of oils, grease, fuels, etc. to be used during the construction phase.
k. Waste (including building rubble) not to be placed on the soil stockpiles or disposed in a haphazard way in the surrounding area resulting in the contamination of the soil and the environment.
l. During the construction phase, cement/concrete should be mixed in either demarcated areas or on metal sheeting or conveyor belts. If mixed in demarcated areas, these areas must be ripped and the cement/concrete removed on completion of construction activities.
m. Collection containers (e.g. drip trays) must be placed under all dispensing mechanisms for hydrocarbons or hazardous liquid substances to ensure that potential contamination from leaks/spillage is reduced. All spills of chemicals or hydrocarbons (oil, grease, diesel, petrol, etc.) should be cleaned with the use of suitable absorbent materials (e.g. drizit or oclanzorb). Appropriate soil remediation measures should be implemented where soil has been contaminated with oil.
n. Contaminated soil generated as a result of fuel, oil, etc. spills to be disposed of in a specially marked drum located at the construction site office. An approved waste contracting firm to collect the drum and dispose of the contaminated soil at an appropriate waste disposal site.
o. An environmental incident report must be completed indicating the date of the incident, description of incident and action taken.
p. The Department of Agriculture, Rural Development, Land and Environmental Affairs (DARLEA) and the Department of Water and Sanitation (DWS) must be informed of the event within 24 hours.
q. A copy of the environmental incident report must be kept on file at the construction site office(s).

Example of Environmental Incident Register:

ENVIRONMENTAL INCIDENT REGISTER				
DATE AND TIME	INCIDENT REPORTED BY	CONTACT DETAILS (telephone/cell number; address)	DETAILED DESCRIPTION OF ENVIRONMENTAL INCIDENT REPORTED	RESPONSE FROM ECO

9.5.3 Rehabilitation of the environment after construction

Impact management outcome:

1) *To ensure that any disturbed areas not developed are properly rehabilitated and maintained.*
2) *To control the growth of declared weeds and/or invader plants.*

Mitigation and management measures:

a. Before construction, the remaining topsoil must be removed and stockpiled in a demarcated area within the site for rehabilitation of disturbed areas and/or landscaping.
b. The topsoil should not be compacted.
c. A meeting to be held on site between the applicant, contractor and the Site ECO to approve all remediation activities to be undertaken as part of the rehabilitation of the site in order to ensure that the site is rehabilitated to acceptable standards.
d. Once construction has been completed, all temporary structures, excess materials, equipment and waste must be removed from site.
e. All residual stockpiles must be removed to spoil or spread on site as directed by the Site ECO.
f. The site and surrounding areas to be cleared of all litter.
g. Any undeveloped disturbed areas (i.e. areas to be developed at a later stage or to be used for landscaping) must be top soiled and re-vegetated (i.e. rehabilitated) as soon as possible in order to prevent soil erosion and the establishment of alien vegetation.
h. Proper storm water control measures and erosion control must be implemented to prevent erosion of the newly rehabilitated areas during heavy rainfall.

i. Temporary erosion control measures (e.g. geo-textile silt fences, diversion ditches, sediment traps, sandbags, etc.) to be kept in place to control erosion until the long-term erosion control methods are established and functioning.

j. For rehabilitation purposes, indigenous water wise plants must be used. The local nurseries specialising in indigenous plants should be consulted with regards to appropriate plants to be used with regards to the landscaping of the site.

k. The planting of any alien invader plant species as part of landscaping should be prohibited in order to prevent the spread of invasive species from the site.

l. The regulations in terms of Alien Invasive Species and the Mpumalanga Nature Conservation Act, 1998 (Act 10 of 1998) with regards to declared alien species must be noted and complied with.

m. Regular site inspections to be conducted to identify any declared weeds and/or invader plants. If identified, the plants to be eradicated using appropriate methods.

n. It is advisable to consult the latest edition of 'A guide to the use of herbicides' or contact the National Department of Agriculture, Forestry and Fisheries with regards to the latest information pertaining to the application of herbicides. If pesticides or herbicides are to be used, the product should be chosen responsibly. Storage, administering and disposal must be done according to the prescribed methods.

o. A post-construction audit by the Site ECO must be conducted to ensure that any shortcomings are identified and addressed.

9.5.4 Interested and Affected Parties (I&APs)

Impact management outcome:

1) To ensure that the site workers are not impacted in terms of the construction work being performed.

Mitigation and management measures to be implemented:

a. The applicant/contractor must adhere (at all times) to the requirements of the Occupational Health and Safety Act, 1993 (Act 85 of 1993) (as amended), the Construction Regulations, 2003 (as amended) and any other applicable legislation (including applicable bylaws of the eMalahleni Local Municipality).

b. The applicant/contractors must ensure that the necessary protective gear (PPE) is worn at all times and that signs are erected to warn workers to use hearing protection as well as any other hazards.

c. All machinery used on site must be properly muffled and maintained so as to reduce noise generation to a minimum.

d. If blasting is required, the requirements of the Explosives Act, 2003 (Act 15 of 2003) must be put in place in order to prevent any impact on site workers.

Impact management outcome:

2) To ensure that adjacent landowners/users (i.e. Portuguese Club, Casa Portuguesa Restaurant, Nissan Dealership, residents of Highveld View and Del Judor X4, etc.) are not impacted in terms of the construction work performed.

Mitigation and management measures to be implemented:

a. Landowners/users to be notified in advance that construction will commence.
b. Landowners/users to be provided with contact numbers (e.g. cell numbers, email, etc.) with whom complaints can be lodged.
c. Landowners/users to be informed in advance that blasting will take place (if required). Mitigation measures to be implemented to limit the impact of blasting on residents, property, domestic animals, etc.
d. The waste management measures as indicated in Section 9.5.2 to be implemented in order to keep the site neat and tidy at all times.
e. All machinery used on site to be properly muffled and maintained so as to reduce noise generation to a minimum.
f. Site workers must be instructed to keep noise to a minimum.
g. Construction activities to be limited to daylight hours (7am - 6pm) and weekdays (Monday to Friday) in order to minimize the impact on residents in terms of noise and dust.
h. No members of the general public should be allowed at the construction site.
i. A notice must be placed in the Witbank News if the connection of the bulk services is going to lead to any service interruptions in eMalahleni.

Impact management outcome:

3) To ensure that general road users and pedestrians utilizing Nita Avenue and Mandela Drive are not impacted as a result of the construction and operation of the retail development (especially in terms of the upgrading of roads).

Mitigation and management measures:

a. Proper signage, warning signals, a barrier, etc. (i.e. required safety measures) must be provided along Nita Avenue and Mandela Drive to warn the road users that the access roads to the retail centre are being constructed. These signs must be visible at night.
b. Construction vehicles to only access the site from Nita Avenue.
c. Disruption of traffic during peak periods to be minimised or if possible avoided.
d. The following to be implemented as recommended by Van Rooyen (2020):
   - Conversion of the 'All-way' stop to a 'two-phase' signalised intersection;
   - Addition of a left-turn lane on western side of Nita Avenue;
   - Addition of a slip exit lane on the eastern side of Nita Avenue.
   - A pedestrian walkway (1.5m wide) along the northern and western boundaries of the site;
   - An additional public transport facility formal pick-up/drop-off/waiting area to accommodate 12 minibus taxis within the parking area of the proposed development.
e. Only the access points from Nita Avenue and Mandel Drive to be used during the operational phase as indicated in the layout plan.

Impact management outcome:

4) To ensure good relations with all Interested and Affected Parties (I&APs) by creating open channels of communication to address matters of concern that may arise.

Mitigation and management measures to be implemented:

a. Landowners/users (i.e. residents of Highveld View Estate/Del Judor X4 and nearby businesses) to be provided with contact numbers (cell numbers, email, etc.) with whom complaints can be lodged.
b. A Complaints Register to be kept at the construction site office(s).
c. All complaints received to be recorded in the Complaints Register. The following to be recorded:
    - Date when complaint/concern was received;
    - Name of person to whom the complaint/concern was reported;
    - Nature of the complaint/concern reported;
    - Way in which the complaint/concern was addressed (date to be included).
d. All complaints received must be investigated and a response given to the complainant within 7 days.
e. The Complaints Register to be kept up to date for inspection by members of the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) and the eMalahleni Local Municipality (ELM).

An example of a complaints register is provided below.

COMPLAINTS REGISTER				
DATE AND TIME	NAME	CONTACT DETAILS (telephone/cell number; address)	DETAILED DESCRIPTION OF COMPLAINT	RESPONSE FROM ECO

9.5.5 Operational activities

a. The applicant must comply with the conditions of the issued Environmental Authorisation.
b. All operational activities must be limited to the said site.
c. The following **energy saving** initiatives should be implemented, where possible, in order to reduce the carbon footprint of the development.
    - *Energy efficient lighting (e.g. LED lighting) to be installed where possible;*
    - *Designing the buildings in such a way as to maximize the use of daylight (e.g. skylights, large windows, etc.);*

- *Solar geysers to be installed where feasible.*

d. The following measures to minimize **water use** during the operational phase must be implemented:
   - *Regular maintenance of the water infrastructure to minimize water wastage;*
   - *Harvested stormwater to be used for irrigation of gardens if required;*
   - *Water usage to be monitored;*
   - *Waterwise signage to be displayed in the public restrooms;*
   - *Waterwise taps (e.g. taps with infra-red sensors/low-flow taps) to be installed in the public restrooms.*

e. The water and sewer infrastructure should be inspected on a regular basis to ensure that there are no blockages/leakages or spillage.

f. Proper waste management measures must be implemented at the shopping centre.
   - Waste bins for general waste must be provided in a number of places on site and in the parking area to minimize the distance to waste bins.
   - The site must be kept clean and tidy at all times and may not be littered with waste lying outside of waste bins.
   - No waste may be burnt, buried or dumped on site.
   - Where possible, recycling of waste must be encouraged and appropriate bins provided for the recycling initiative.
   - A fence/wall must be erected around the refuse area in order to contain the waste and to ensure that it does not have a visual impact on shoppers and adjacent residents.

g. The overall management of the site and associated infrastructure will be of utmost importance and therefore the implementation of these mitigation measures must be monitored and audited on a regular basis.

h. It is recommended that the developer and new shop owners become involved with the local Community Policing Forum (CPF) in order to combat crime (e.g. burglaries, etc.).

9.6 Implementation and monitoring of the EMPr

An EMPr must include -
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations.

The implementation of the Environmental Management Programme (EMPr) as part of the daily construction and operational activities is crucial and requires commitment from all levels of management and the on-site workers. The successful implementation of an EMPr has the following advantages:

- Meeting legal obligations;
- Contributes to environmental awareness;
- Can facilitate the prevention of environmental degradation;
- Can minimize impacts when they are unavoidable;
- Can ensure good environmental performance and improve community relations.

An approved contractor should be appointed to do the necessary construction on the said site. The contractor and site workers must be aware of their environmental responsibilities. Penalty clauses, in terms of the environment, must be built into the contracts and must be implemented. Monitoring of the environmental management programme must take place on a regular basis in order to ensure compliance.

The contractor must inform all site workers of their environmental responsibility during the construction phase. Measures to protect the environment and mitigation measures formulated in this EMPr must be implemented by the contractor and the site workers. The contractor must thus ensure that the site workers are aware of the Environmental Authorisation and this EMPr and understand the contents thereof.

In order to achieve the above-mentioned, the contractor and site workers should undergo basic environmental awareness training with regards to the contents of this EMPr. Environmental awareness training is critical for the contractor and site workers to understand how they can play a role in achieving the objectives specified in the EMPr. The contractor must ensure that the site workers undergo the necessary environmental awareness training (see Section 9.6.1) before commencing with activities on the site.

This section must be completed on acceptance of the appointment.

MANAGEMENT ACCOUNTABILITY		
Accountability	**Title**	**Name**

MANAGEMENT DECLARATION

I, the undersigned in my capacity as designated above hereby undertake to ensure that the conditions and recommendations in terms of the Environmental Authorisation and Environmental Management Plan (EMPr) are implemented and assume responsibility and accountability in this respect.

I further understand that officials from the eMalahleni Local Municipality, Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) and Department of Water and Sanitation (DWS) may (at any time) conduct an inspection of the project in order to ensure compliance with the conditions and recommendations in the EMPr.

CONTRACTOR

……
Name and Designation

……
Signature:

……..
Date:

EMPLOYER

……
Name and Designation:

……
Signature:

……
Date:

9.6.1 Environmental Awareness Plan (EAP)

An EMPr must include -
(m) An environmental awareness plan describing the manner in which-
- *(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and*
- *(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.*

It is recommended that the employees receive basic environmental awareness training. In order to ensure proper training, the applicant must develop and implement an Environmental Awareness Plan (EAP). This section provides an overview of what the proposed EAP will contain and how it will be implemented.

The following components would form an essential part of an Environmental Awareness Plan (EAP): -

- Development of an environmental policy;
- Identification of environmental impacts/risks and mitigation measures;
- Environmental training, awareness and competence;
- Environmental communication and reporting.

Development of an environmental policy

The applicant would have to compile an Environmental Policy (if they do not have one already), which is a one page statement setting out certain principles in terms of their environmental performance.

The environmental policy should indicate the following:
- The applicant's commitments in terms of the environment;
- Identify environmental impacts as a result of the activities taking place on site;
- Actions to be taken to minimize/mitigate the environmental impacts.
- Signature of management.

In order to ensure effective environmental management, it is important that the Environmental Policy is known and understood by all employees. It should thus be displayed at the construction site office.

An Environmental Policy Template is provided to assist the applicant in the compilation of their Environmental Policy. A number of templates are also available on the internet.

Environmental Policy Template (taken from Richmond upon Thames, 2012)

*[*Insert company name here*] believe that we have a responsibility to care for and protect the environment in which we operate. We are fully committed to improving environmental performance across all of our business activities, and will encourage our business partners and members of the wider community to join us in this effort.*

*[*Insert company name here*] recognises our key impacts to be in the areas of [for example]:*

- *energy use*
- *raw material use*
- *waste generation*
- *emissions to air/water*
- *water use*
- *transport*
- *procurement*

We will strive to:

- *Adopt the highest environmental standards in all areas of operation, meeting and exceeding all relevant legislative requirements.*
- *Assess our organisational activities and identify areas where we can minimise impacts.*
- *Minimise waste through careful and efficient use of all materials and energy.*
- *Purchase sustainable products wherever feasible [e.g. recycled, FSC or low environmental impact products and energy from renewable sources].*
- *Train employees in good environmental practice and encourage employee involvement in environmental action.*
- *Reduce risks from environmental, health or safety hazards for employees and others in the vicinity of our operations.*
- *Adopt an environmentally sound transport strategy.*
- *Aim to include environmental and ethical considerations in investment decisions where appropriate.*
- *Assist in developing solutions to environmental problems.*
- *Continually assess the environmental impact of all our operations.*

*[*Insert company name here*] have developed a series of action plans to supplement each of our environmental policy objectives. These can be found* [in an appropriate place*].*

*[*Insert company name here*] will periodically review performance and publish these results [*in an appropriate manner*].*

Signed _____

Identification of environmental impacts / risks and mitigation measures

Environmental impacts/risks in terms of the development are indicated in Section 8 of this document while mitigation measures to be implemented are provided in Section 9.

Activities or work procedures that could have a significant impact on the environment have thus been identified and mitigation measures proposed in order to avoid pollution or the degradation of the environment.

This information must be communicated to the employees and thus forms the basis for developing an Environmental Awareness Plan (EAP) in order to ensure effective environmental management.

Environmental training, awareness and competence

Training is necessary in order to advance the competency of employees in implementing the Environmental Policy and the EMPr and to ensure effective overall environmental management.

The applicant (including appointed contractor) must inform all his employees of their environmental responsibilities in terms of this Environmental Management Programme (EMPr). Measures to protect the environment and mitigation measures formulated in this EMPr must thus be implemented by the applicant and employees (including appointed contractor).

In addition, job specific training must be conducted that will be appropriate to the activity and the responsibility of the individual employees. Ad-hoc training will be undertaken as required.

Through training/awareness, the applicant will also make his employees aware of:

- the importance of conformance with the environmental policy and the requirements of the EMPr;
- the significant environmental impacts, actual or potential, of their work activities and the environmental benefits of improved personal performance;
- their roles and responsibilities in achieving conformance with the environmental policy and the requirements of the EMPr, including emergency preparedness and response requirements; and
- the potential consequences of departure from the specific operating procedures and/or mitigation measures specified in the EMPr.

Environmental training and development needs of employees will be identified on a regular basis through:

- Identification of significant environmental impacts;
- Analysis of non-conformance and incident reports;
- Audit reports.

Environmental communication and reporting

Environmental communication and reporting form an integral part of an Environmental Awareness Plan. It is important to maintain effective communication internally and to ensure that external communication (e.g. with government departments or adjacent landowners) is maintained.

In general, environmental communication and reporting will aim to:

- Ensure that employees understand the environmental policy and objectives;
- Ensure that information is communicated and readily accessible to the relevant parties;
- Improve feedback of operational and environmental performance to management;
- Ensure effective and constructive communication with relevant government departments and adjacent landowners (if applicable);
- Ensure that records are kept of environmental communication and interaction.

The following are some of the topics that should be discussed with new employees:

- Time of commencement and completion of duties;
- Cleaning of workplace and the importance thereof;
- Safety clothing and its importance and correct use;
- Procedure to follow in case of illness and injury;
- Annual leave and when due;
- Importance of instructions;
- Late for work and leaving workplace without permission;
- Emergency procedures;
- Environmental awareness;
- Training and its importance;
- Alcohol and drug abuse;
- Medical fitness;
- Disciplinary procedures.

The following topics should form part of the environmental awareness discussions to be held with the employees:

- NO-GO areas;
- Water;
- Fauna and flora;
- Smoking and fires;
- Dust;
- Noise;
- Waste management.

Various signs (including the Environmental Policy) should be displayed on site to remind site workers of the basic environmental principles and inform them of the 'DO'S' and 'DON'TS'.

The applicant must conduct regular inspections to check on site conditions and to provide training when necessary to ensure that the mitigation measures are being implemented and that the environment is carefully looked after.

9.6.2 Site documentation and record keeping

The following documentation must be available (at all times) at the construction site office:

- A copy of the Basic Assessment Report (BAR) and Environmental Management Programme;
- A copy of the Environmental Authorisation;
- A copy of the Environmental Policy;
- A copy of site audit reports;
- A copy of any other permits/approvals and/or service agreements from other authorities/landowners/etc.

The documents should be kept as hard copies as well as in electronic format.

Complaints Register

A complaints register must be kept at the construction site office. Any complaints received with regards to the project must be recorded in the complaints register. The following information must be recorded:

- Date complaint recorded;

- Nature of complaint;
- Details of complainant (name, address, telephone number, etc.);
- Manner in which complaint was dealt with;
- Date when complaint was reported to the Department of Agriculture, Rural Development, Land and Environmental Affairs and the Department of Water and Sanitation.

Emergency numbers
Emergency numbers (e.g. manager, police, fire department, ambulance, etc.) must be prominently displayed at the construction site office.

Contact details of affected landowners/users must also be kept on file.

Other legislation
The following should also be displayed at the construction site office:

- Occupational Health and Safety Act, 1993 (Act 85 of 1993) as amended;
- Basic Conditions of Employment Act, 1997;
- Summary of the Employment Equity Act.

Supplementary documentation
The following supplementary documentation should be kept at the construction site office:

- Site instructions;
- Emergency preparedness and response procedures;
- Incident reports;
- Training records;
- Site inspection, monitoring and auditing reports.

During the course of the development, the applicant and employees must also comply with all other relevant legislation.

9.6.3 Auditing and corrective action

Environmental audits identify existing and potential environmental problems and determine what action is needed to comply with legal requirements and the Environmental Management Programme (EMPr). Subsequent audits then confirm that corrective actions have been taken and assess the effectiveness of such actions.

Construction phase:
Site Environmental Control Officer (SECO): The applicant must appoint a person who will be responsible for the day-to-day implementation of the EMPr (including Environmental Awareness Training) and will report to the site manager.

Environmental Control Officer/Auditor (ECO): The applicant must appoint an ECO who will have the responsibility of monitoring and reporting on compliance with the conditions of the Environmental Authorisation as well as monitoring and reporting on the implementation of the EMPr.

The ECO must be appointed before the commencement of construction and must remain employed until all rehabilitation measures as well as site clean-up are completed.

The ECO will be responsible to:

- Monitor and audit the construction activities on a monthly basis;
- Keep a record of each site inspection and the findings thereof;

- Make a register of the environmental monitoring and auditing results available for inspection at the construction site office;
- Keep records relating to the compliance and non-compliance with the conditions of the Environmental Authorization;
- Make these records available to the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) within seven (7) working days of the date of the written request by the Department for such records.

A good approach to facilitate legal enforceability of the EMPr during the construction phase is to integrate the EMPr into the tender and contract document (i.e. between the project applicant and the contractors) as a set of environmental specifications. The contractor will thus be informed prior to being appointed of his environmental responsibilities.

Penalties in terms of the environment should be implemented upon non-compliance. This will ensure that the project applicant does not sit with an environmental liability at the end of the contract.

A post-construction audit should be conducted prior to the contractors leaving site. There are several levels at which corrective action can be affected, namely verbal instructions, written instructions and contract notices.

Level 1: The problem is discussed with the contractor and a solution is worked out together. The discussion is minuted for record purposes and the solution implemented.

Level 2: When a more serious infringement is observed, the contractor is notified in writing and given a deadline by which the issue must be rectified. Costs to be borne by the contractor.

Level 3: The contractor will be ordered to suspend all or part of the work until such time as the problem is rectified or remedial measures put in place. Costs to be borne by the contractor and no extension of time will be granted.

Level 4: Breach of contract and/or termination of employment. The applicant may also institute legal proceedings against the contractor.

An example of a penalty schedule is provided below.

PENALTY SCHEDULE

Level	Description	Penalty	Offences
1	Minor offence	R1000 first offence R2000 second offence And R1000/per day that offence continues beyond notification of offence	• Littering; inadequate or inappropriate on-site waste management or sanitation • Uncontrolled noise and dust nuisance Poaching on site • Inadequate soil / water protection controls for fuel storage & dispensing areas, vehicle parking areas
2	Moderate offence	R5000 first offence R10 000 second offence And R5000 per day that the offence continues beyond notification of offence	• Trespassing onto neighbours properties • Removal of indigenous trees marked for conservation purposes without the permission of the ECO, or trees in demarcated sensitive environmental zones • Disposal of any form of waste to a non-approved dump site • Any illegal /non-permitted abstraction or use of water from a natural resource • The withholding of pertinent information or provision of false information to the ECO or Project Manager
3	Significant offence	R30 000 first offence R50 000 second offence And R30 000 per day that the offence continues beyond notification of offence	• Non-compliance with any risk or safety management requirements • Significant spillage of hazardous materials • Use of natural materials not sourced from a legally permitted source • Construction or use of roads/access across rivers, streams or wetlands that has not been authorized by the Project Manager and ECO
4	Serious offence	Up to R500 000 or total cost of rehabilitating damaged environment	• Any serious pollution event or accident • Any serious encroachment into demarcated sensitive environmental zones, by accident or on purpose • Any serious stormwater damage that could have been avoided through appropriate management interventions

In addition to the schedule of penalties, a portion of the Retention on all contracts could be apportioned to compliance with the EMPr.

<u>Operational phase:</u>
The applicant will be responsible for auditing and corrective action during the operational phase of the development.

SECTION 10: ENVIRONMENTAL IMPACT STATEMENT

10.1 Introduction

The applicant, *Meronox (Pty) Ltd.*, intends to develop a retail centre on Erven 20, 21 and 22 of President Park X6, eMalahleni. The proposed site is located on the corner of Nita Avenue and Mandela Drive, adjacent to the Portuguese Club and opposite the Nissan dealership, eMalahleni.

The entire site is ±3 ha in extent, with the specific stand sizes as follows: Erf 20 (0.99ha), Erf 21 (0.98ha) and Erf 22 (1.08ha). The erven are zoned 'Business 2', which permits a number of land uses (e.g. shops, liquor outlets, laundromat, car wash, motor dealership, offices, etc.) in terms of the Emalahleni Land Use Scheme, 2020. The specific land uses to be established on site must still be finalized.

The said site is located within the urban edge of the eMalahleni Local Municipality. Services (water, sewage, electricity, etc.) will be provided by the eMalahleni Local Municipality. The link services (roads and electricity) and the internal reticulation (water, sewer, electricity, streets and street lighting) of the development will be done by the developer to the satisfaction of the eMalahleni Local Municipality.

10.2 Alternatives

Section 7 provides a detailed description of all alternatives investigated with regards to this project. The mitigation hierarchy (Avoid, Reduce (mitigate and manage), Remediate (rehabilitate and restore), Offset/compensate) was implemented with regards to evaluating the alternatives as indicated in Tables 7.1, 7.2 and 7.3.

As indicated in Section 7.6, the following alternatives were deemed feasible and were assessed in Section 8.5:

Preferred Alternative	Description
Site: Erven 20, 21 and 22	The development site will be located on Erven 20, 21 and 22 of President Park X6, eMalahleni.
Business (retail centre) Alternative 3	A retail centre will be established on the said property.
Layout 4 (Figure 8.1)	All infrastructure located outside of the 28m buffer associated with the adjacent Seep Wetland. No provision made for a filling station (Figure 7.7).
Water provision Alternative 1	Water from eMalahleni Local Municipality and will connect to existing water infrastructure of eMalahleni Local Municipality.
Electricity Alternative 1	Obtaining electricity from eMalahleni Local Municipality.
Sewage disposal Alternative 1	Connecting to existing sewer infrastructure of eMalahleni Local Municipality.
Waste management Alternative 1	Waste collected by the ELM and disposed of at the registered Leeuwpoort Waste Disposal Site.
Storm water management Alternative 2 (Figure 8.1)	Connecting to the existing municipal storm water system of the eMalahleni Local Municipality and upgrading thereof with attenuation of storm water (Figure 7.10) at outlets.

10.3 Potential impacts identified

The environmental features of the site and surrounding area are described in Section 5 of this report. Potential impacts on the environment (both positive and negative) that could take place are detailed in Section 8 while Section 9 provides mitigation measures to be implemented in order to reduce the said impacts.

As indicated in Section 5.4, the site is underlain by rhyolite of the Selons River Formation, Rooiberg Group. Material was excavated from site for the construction of Mandela Drive and other streets in eMalahleni. According to Hansmeyer (2010), the deeper section of the borrow pit was most probably more than 2m below surface. The borrow pit was subsequently backfilled with building rubble and sand and levelled. The geology of the majority of the site has thus been impacted.

Although the topography of the site has been altered, Hansmeyer (2010) indicated that the potential for slope failure is minimal (small) and that the gradient of the site is suitable for development.

According to Hansmeyer (2010), the majority of the site comprises highly compressible founding material. Two Geotechnical zones – Geotechnical Zone 2B and 2C - were identified on site. Structures built within Geotechnical Zone 2B will require deep foundations.

Hansmeyer (2010) demarcated the backfilled borrow pit area as Geotechnical Zone 2c and indicated that the imported fill material must be replaced by inert material or the fill material must be cut to spoil. Approximately 25 000m^3 of fill material will be required.

The said backfilled borrow pit is highly permeable, resulting in a perched water table ranging between 1.8m and 2.5m below surface (Hansmeyer, 2010). The perched water table is as a result of surface water runoff from the higher lying areas draining towards the site and accumulating in the backfilled area. According to Hansmeyer (2010), unstable sidewall conditions can be expected within this geotechnical zone.

In both Geotechnical Zones, the mitigation measures recommended by Hansmeyer (2010) must be implemented in order to avoid any impact on the structures built.

Venter (2020b) indicated that most of the site (i.e. the levelled area) falls within the Technosol group and more particularly the Johannesburg soil form (i.e. soil profiles covered by concrete structures, cement and waste materials including building gravel). This soil form is not suitable for agricultural purposes. In addition, the proposed site is located within an already developed area. The sensitivity rating for the Agricultural Combined Sensitivity Theme should therefore be Low (and not Medium as indicated in the Screening Report).

The proposed site falls within the Rand Highveld Grassland vegetation type, which is a Vulnerable vegetation type. Venter (2020a) confirmed that the vegetation to the east of the site (i.e. outside of the site boundaries) is a remnant of the Rand Highveld Grassland vegetation type. The remaining terrestrial vegetation on site has however, been highly modified/transformed (due to past disturbances on site) and has a low species diversity. It no longer

resembles this vegetation type (Venter, 2020a). In addition, Venter (2020a; 2020b) did not record any threatened plant species during the site visits. In view of this, Venter (2020a) indicated that the vegetation on site is of Low sensitivity.

The site sensitivity for plant species theme is therefore Low (and not Medium as indicated in the Screening Report) and also Low for the terrestrial biodiversity theme (and not Very High as indicated in the Screening Report).

The highly modified/transformed nature of the vegetation and the location of the site within an urban environment and within close proximity to residential areas (and domestic animals) provides limited (artificial) habitat for animal species (i.e. smaller fauna species). The site sensitivity for the animal species theme is therefore Low as indicated in the Screening Report.

As indicated in Section 5.8, the Giant Bullfrog was noted on site within an artificial ponding area located in the south eastern corner of the site. The conservation status of the Giant Bullfrog is 'near-threatened' (and 'least concern' in the latest literature).

Van Wyk (2020) indicated that *'the development site is not of high conservation value. Even if the site is left in its current condition of neglect, it is not guaranteed that the giant bullfrog would survive in the long run due to the many anthropogenic factors on and around the site. Neighbouring properties and roads restrict bullfrog foraging, hibernation-aestivation and dispersal. Habitat fragmentation has taken place and walls, buildings, roads and other structures increasingly inhibit movement'.* In other words, the proposed site does not provide suitable habitat for bullfrogs.

According to Van Wyk (2021), it is evident that the Giant Bullfrog population on or near the site is very small and would require an exceptional rainy season for the population to breed successfully. During previous breeding attempts (2017, 2019 and 2021), the artificial depressions dried up and all the tadpoles died before metamorphosis could be completed. The long-term survival of the population is thus not guaranteed.

Both Dr. H. Botha (MTPA) and the bullfrog specialist (J. van Wyk) agreed that the development may proceed with the implementation of mitigation measures (see Section 9 (EMP) of this report).

According to the MBSP Freshwater Biodiversity Assessment (2013), the proposed development site does not fall within an Ecological Support Area (ESA): Important subcatchment or Critical Biodiversity Area. It does however, fall within an ESA: Wetland Clusters.

According to Venter (2020b), no hydric (wetland) soil forms are present on site even though the vegetation in the central, northern and eastern portions of the site does indicate wetter conditions. No wetlands and sensitive landscapes (rivers/streams/wetlands/seepage areas, etc.) are thus present on site. The Low sensitivity rating for the Aquatic Biodiversity Theme as per the Screening Report is therefore correct.

A Seep Wetland is however, present on the eastern boundary (Venter, 2020b). Based on the findings of the wetland study, Venter (2020b) recommended a 28m buffer zone around the Seep Wetland. The Very High sensitivity for the Aquatic Biodiversity theme (as per the Screening Report) would therefore be applicable to this offsite wetland area.

The storm water management plan that provides for the attenuation of storm water must be implemented in order to prevent any impact on the Seep Wetland and the downstream Channelled Valley Bottom Wetland.

Van Vollenhoven (2020) identified no sites of cultural heritage significance within the proposed site. From a palaeontological point of view, Fourie (2020) raised no objection to the proposed development and indicated that the development may go ahead with caution.

Van Rooyen (2020) indicated that the proposed development is supported from a traffic engineering perspective, provided that the necessary intersection upgrades and site accesses are implemented. Of particular importance would be the upgrading of the intersection of Mandela Drive and Nita Avenue as recommended.

The proposed retail development would be highly visible and easily accessible from Mandela Drive and therefore fits into the development plans of the eMalahleni Local Municipality. The site would be managed improving the visual aspects of the site and no longer posing a health and safety risk to residents living in the nearby residential area. The proposed development should therefore not impact on the sense of place of the area.

The management of the site during the construction and operational phases will thus be of importance, not only from a visual point of view but also to minimize any negative impact on the environment and Interested and Affected Parties. Regular monitoring and auditing of the activities must take place during the construction phase.

10.4 Public participation

The public participation process followed is described in Section 6 of this report.

The proposed development site belongs to the project applicant and the development of the said site will thus not impact directly on any other interested and affected party.

Issues of concern received through this public participation process and the way in which these issues were addressed are detailed in Section 6 and Table 6.4. In view of the comments received, the following specialist studies were undertaken and the findings included in this report:

- Traffic Impact Assessment;
- Heritage Impact Assessment;
- Palaeontological Impact Assessment;
- Giant Bullfrog Habitat Assessment.

No objections in terms of the proposed development were received.

10.5 Assumptions, uncertainties and gaps in knowledge

The following assumptions and limitations are applicable to this report:

- The report is based on project information provided by the applicant.
- In determining the significance of impacts after mitigation, it is assumed that the proposed mitigation measures will be implemented by the

applicant during the construction and operational phases of the development.
- Due to the subterranean nature of fossils and heritage resources, objects or features may be uncovered during the construction phase.
- The data presented in the specialist reports are based on single site visits, which are deemed sufficient for the purposes of this BA process.

10.6 Reasoned opinion as to whether the proposed activity should be authorised (or not)

In view of the highly disturbed nature of the site, the proposed development of the site as per Layout Plan 4 (Figure 8.1) would have an overall low negative impact since all infrastructure would be located outside of the 28m wetland buffer associated with the adjacent Seep Wetland. In addition, a storm water management plan providing for the attenuation of storm water would also be implemented.

Based on the findings of this Basic Assessment Report, it is felt that the proposed project could be approved subject to the implementation of the mitigation measures proposed in the Environmental Management Programme (EMPr) provided in Section 9 of this report.

Regular monitoring and auditing of the activities should take place during both the construction and operational phases to ensure that the mitigation measures are implemented. The development must be managed in such a way that it is environmentally sustainable, acceptable to the community and complies with the objectives of the National Environmental Management Act, 1998 (Act 107 of 1998).

In view of the findings of this Basic Assessment, the following listed activity can be approved:

Listing	Activity
Listing Notice 1 (GN R983 as amended) Listed Activity 27	*The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for— (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.*

10.7 Reasons why the activity should be authorised (or not)

It is recommended that <u>the activity be authorised</u> for the following reasons:
- √ The proposed site belongs to the project applicant.
- √ The said property is situated within the urban edge of the eMalahleni Local Municipality.
- √ The site is already zoned for business purposes (Business 2).
- √ The site is situated in an area with a mixed land use character and the proposed retail centre will therefore fit in with the surrounding land uses and would not impact on the sense of place.
- √ The site is located adjacent to Mandela Drive, which was identified in the Spatial Development Framework (2015) as one of the activity spines where the Municipality would allow non-residential land uses in order to optimally utilize the visual exposure from the high traffic volumes along this road. The proposed business area adjacent to Mandela Avenue

therefore fits into the development plans of the eMalahleni Local Municipality.

- √ Being located within an established urban area, services (water, sewage, electricity) can easily be provided by connecting to the existing networks of the eMalahleni Local Municipality.
- √ No Interested and Affected Party will be directly impacted.
- √ No objections to the proposed retail centre were received.
- √ The proposed development will NOT impact on any sensitive natural or cultural areas.
- √ No surface water environments (e.g. rivers, streams, wetlands, etc.) are present on site.
- √ The proposed project will not have any negative impacts on the environment that cannot be mitigated and managed.
- √ The site would be managed improving the visual aspects of the site and no longer posing a health and safety risk to residents living in the nearby residential area.
- √ The proposed development would lead to additional employment opportunities during the construction and operational phases.
- √ The development would provide business opportunities and potential employment to residents of the nearby residential area and eMalahleni.

Based on the above-mentioned, it is evident that:

- the proposed development is necessary (need);
- the proposed development will be located on an appropriate site (desirability);
- the development will benefit the local/regional community.

Therefore, the need and desirability of the said project was determined through the Basic Assessment process.

10.8 Period for which the EA is required

It is expected that construction will commence as soon as the relevant approvals are obtained. The development of the retail centre may however, depend on the market and the demand for retail space.

It is therefore estimated that the period for which the EA is required is 10 years.

10.9 Conditions to be included in the EA

The following conditions should be included in the Environmental Authorisation:

- *The management and monitoring measures as indicated in Section 9 (EMPr) of the Basic Assessment Report must be implemented.*
- *The geotechnical mitigation measures recommended by Hansmeyer (2010) must be implemented in order to avoid any impact on the structures built.*
- *No structures to be built within the 28m wetland buffer associated with the adjacent Seep Wetland.*
- *The storm water management plan providing for the attenuation of storm water to be implemented.*
- *The upgrading of the intersection of Mandela Drive and Nita Avenue as recommended by the traffic engineers to be implemented.*

SECTION 11: EVALUATION OF DRAFT BASIC ASSESSMENT REPORT

11.1 Availability of Basic Assessment Report

The Draft Basic Assessment Report (dated: April 2020) will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs for evaluation purposes. A hard/soft copy of the document will also be forwarded to the following authorities for evaluation (30-day period):

- Department of Water and Sanitation;
- eMalahleni Local Municipality;
- Mpumalanga Tourism and Parks Agency.

A hard copy and electronic copy of the Draft Basic Assessment Report will be made available during the above-mentioned period to Interested and Affected Parties and stakeholders consulted and/or registered as part of the Basic Assessment Process (refer to Section 11.2).

A hard copy of the Draft BAR will be provided at the Casa Portuguesa Restaurant/Portuguese Club and the main Witbank Public Library. An electronic version will be made available on the company website (www.adienvironmental.co.za). An advertisement in this regard will be placed in the Witbank News in order to inform the larger community.

The various departments, stakeholders and I&APs will be requested to forward any comments on the report to the consultant within the 30-day period provided. These comments will be included and addressed in:

- Section 11 (Evaluation of Draft Basic Assessment Report);
- Table 11.1 (Summary of Issues of Concern and Response); and
- Appendix 14;

of the Final Basic Assessment Report.

An e-mail will be forwarded to the various departments, stakeholders and interested and affected parties informing them of the comments received and the submission of the Final BAR for decision making.

The Final BAR (incorporating comments from I&APs) will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs for final decision making.

11.2 Informing Interested and Affected Parties

The following interested and affected parties and stakeholders will be notified by means of facsimile, email, etc. of the availability of the reports for evaluation:

INTERESTED AND AFFECTED PARTY LIST	
Organisation	**Name**
Government Departments	
Department of Agriculture, Forestry and Fisheries (DAFF)	F. Mashabela
Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) - Directorate: Land Use and Soil	J. Venter

INTERESTED AND AFFECTED PARTY LIST	
Management – Ermelo	
Department of Co-operative Governance and Traditional Affairs (COGTA)	M. Loock
Department of Mineral Resources	S. Mathavela
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	T. Mkhonto
Department of Water and Sanitation (DWS)	T. Ndlhovu
Other Organisations/Stakeholders	
Eskom Distribution (Land & Rights)	T. Ludere
Eskom Transmission	L. Motsisi
Mpumalanga Tourism and Parks Agency (MTPA) – Land Advisory Unit	P. Nkosi
South African Civil Aviation Authority	K. Mthapo
South African Heritage Resources Agency (SAHRA)	N. Khumalo (SAHRIS)
South African National Roads Agency (SANRAL)	V. Bota, I. van der Linde, L. Dlanjwa
Trans African Concessions (TRAC)	C. Davis, R. Nkosi
Local Municipality and Municipal Councillor	
Nkangala District Municipality	S. Links, A. Thwala
eMalahleni Local Municipality	E. Nkabinde, O. Riba
eMalahleni Local Municipality	Councillor L. Steyn (Ward 34)
Surrounding Landowners	
Property (Figure 6.2)	**Landowner/Contact person**
Builders Warehouse	H. Sepuba
Casa Portuguesa Restaurant	P. Manarte
CTM	A. Ndala
Del Judor X4 neighbourhood watch	S. White
Vacant Land Portions 415, 416, 120 and 121 of Zeekoewater 311 JS	eMalahleni Local Municipality
Highveld Mall	C. Bendall
Highveld View Estate (CSI Rentals)	J. Laas
Indlela Lodge	W. Cillie
Jerobi Trailers	B. Ellis
Jonsson Workwear	J. Loots
Portuguese Club	M. da Cunha
Resilient REIT Ltd. (Highveld Mall)	S. van der Walt
Witbank Baptist Church	K. Buchan-Smith
Witbank Nissan	M. da Cunha

INTERESTED AND AFFECTED PARTY LIST	
Other	
Leads to Business	D. Wessels
Resident of Del Judor X4	S. Bloy

11.3 Comments received

This section will be completed after the completion of the above-mentioned evaluation period.

REFERENCES

- AdiEnvironmental cc. 2020. **Public Participation Plan for the Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank).** Report prepared by: AdiEnvironmental cc. Report dated: July 2020.

- Council for Geoscience. **1: 250 000 Geological Series Map, 2528 Pretoria**.

- DEA (Department of Environmental Affairs). 2017. **Guideline on Need and Desirability.**

- Fourie, H. 2020. **The Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank) - Palaeontological Impact Assessment: Desktop Study.** Report prepared by: Heidi Fourie Consulting. Report dated: 31 May 2020.

- Hansmeyer, P. 2010. **Geotechnical Investigation of the Foundation Conditions on Portion 234 of the Farm Zeekoewater 311 JS, Witbank.** Report compiled by: Engeolab cc. Report dated: March 2010. Report number: LL1703.

- **List of Ecosystems that are Threatened and in Need of Protection**. (General Notice No. 1002 of 2011). *Government Gazette* 34809: 3-541, 9 December 2011. Government Printing Works, Pretoria.

- Lotter, M.C., Lechmere-Oertel, R. & Cadman, M. 2014. **Mpumalanga Biodiversity Sector Plan Handbook.** Mpumalanga Tourism & Parks Agency, Nelspruit.

- Mpumalanga Tourism and Parks Agency. 2013. **Mpumalanga Biodiversity Sector Plan Map, 2013.**

- Mucina, L. & Rutherford, M. C. (eds). 2006. **The Vegetation of South Africa, Lesotho and Swaziland.** *Strelitzia 19*. South African National Biodiversity Institute, Pretoria.

- Mucina, L., Rutherford, M.C. & Powrie, L.W. (eds). 2005. **Vegetation Map of South Africa, Lesotho and Swaziland, 1: 1 000 000 scale sheet maps.** South African National Biodiversity Institute, Pretoria.

- **National Environmental Management Act 1998 (Act No. 107).** Republic of South Africa, Cape Town.

- **National List of Protected Tree Species under the National Forests Act, 1998 (Act No. 84 of 1998)**. (General Notice No. 734 of 2011). *Government Gazette* 34595: 13-15, 16 September 2011. Government Printing Works, Pretoria.

- **National Water Act, 1998 (Act No 36 of 1998).** Republic of South Africa, Cape Town.

- **South African Heritage Resources Information System (SAHRIS).** 2015. [www.sahra.org.za/sahris].

- **South African Air Quality Information System**. 2020. [www. saaqis.environment.gov.za].

- Van Rooyen, J.M. 2020. **Proposed Retail Development on President Park X6, eMalahleni: Traffic Impact Assessment Report.** Report prepared by: EDL Engineers (Pty) Ltd. Report dated: October 2020. Project number: 20059.

- Van Rooyen, J.M. 2021. **Proposed Retail Development on President Park X6, eMalahleni: Stormwater Management Plan.** Report prepared by: EDL Engineers (Pty) Ltd. Report dated: April 2021. Project number: 20059.

- Van Vollenhoven, A.C., J. Smit and D. Viljoen. 2020. **A Report on a Heritage Impact Assessment for the Proposed Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, eMalahleni, Mpumalanga Province.** Report compiled by: Archaetnos Culture & Cultural Resource Consultants. Report dated: 20 May 2020.

- Van Wyk, J.C.P. 2020. **Giant Bullfrog *(Pyxcephalus adspersus)* Habitat Assessment and Long-term Survival Plans at President Park X6, eMalahleni (Witbank).** Report prepared by: J.C.P. van Wyk. Report dated: November 2020.

- Van Wyk, J.C.P. 2021. **Addendum: Giant Bullfrog *(Pyxcephalus adspersus)* Habitat Assessment and Long-term Survival Plan on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank) on Portion 234 of the Farm Zeekoewater 211 JS, Mpumalanga Province.** Report prepared by: J.C.P. van Wyk. Report dated: 16 February 2021.

- Venter, I. 2020a. **Screening Assessment for the President Park x6 Site.** Report compiled by: Kyllinga Consulting. Report dated: June 2020.

- Venter, I. 2020b. **Wetland Assessment for the President Park X6 Site.** Report compiled by: Kyllinga Consulting. Report dated: November 2020.

- WSP SA Civil and Structural Engineers (Pty) Ltd. 2010**. Proposed Township Development (on Portion 234 of the farm Zeekoewater 311 JS, Witbank). Traffic Impact Study (Proposed Retail Development).** Report compiled by: WSP SA Civil and Structural Engineers (Pty) Ltd. Report dated: March 2010.

APPENDIX 1:

APPLICATION FORM

- Cover letter from AdiEnvironmental cc (dated: 5 May 2021; Ref: BA 2020/03) to the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) regarding submission of application form.
- Copy of the application form.

APPENDIX 2:

CURRICULUM VITAE

- A. Erasmus *Pr. Sci. Nat; Registered EAP*
- R. Janse van Rensburg *Registered EAP*
- List of projects completed by A. Erasmus and R. Janse van Rensburg
- A. van Vollenhoven *Accredited archaeologist*
- H. Fourie *Accredited palaeontologist*
- I. Venter *Accredited ecologist*
- J.C.P. van Wyk *Accredited zoologist*

APPENDIX 3:

ECOLOGICAL STUDIES

- Venter, I. 2020a. **Screening Assessment for the President Park x6 Site.** Report compiled by: Kyllinga Consulting. Report dated: June 2020.
- Venter, I. 2020b. **Wetland Assessment for the President Park X6 Site.** Report compiled by: Kyllinga Consulting. Report dated: November 2020.
- Van Wyk, J.C.P. 2020. **Giant Bullfrog *(Pyxcephalus adspersus)* Habitat Assessment and Long-term Survival Plans at President Park X6, eMalahleni (Witbank).** Report prepared by: J.C.P. van Wyk. Report dated: November 2020.
- AdiEnvironmental cc. 2021. **Monitoring of the President Park X6 Site After the Cyclone Eloise Rains (25 January – 4 February 2021).**
- Van Wyk, J.C.P. 2021. **Addendum: Giant Bullfrog *(Pyxcephalus adspersus)* Habitat Assessment and Long-term Survival Plan on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank) on Portion 234 of the Farm Zeekoewater 211 JS, Mpumalanga Province.** Report prepared by: J.C.P. van Wyk. Report dated: 16 February 2021.
- Letter (dated: 11 February 2021; Ref: 13/6/1) from Dr. H. Botha (Mpumalanga Tourism and Parks Agency);
- E-mail (dated: 19 February 2021) from Dr. H. Botha (Mpumalanga Tourism and Parks Agency) regarding the Addendum.

APPENDIX 4:

HERITAGE REPORT

- Van Vollenhoven, A.C., J. Smit and D. Viljoen. 2020. **A Report on a Heritage Impact Assessment for the Proposed Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, eMalahleni, Mpumalanga Province.** Report compiled by: Archaetnos Culture & Cultural Resource Consultants. Report dated: 20 May 2020.

APPENDIX 5:

PALAEONTOLOGICAL REPORT

- Fourie, H. 2020. **The Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank) - Palaeontological Impact Assessment: Desktop Study.** Report prepared by: Heidi Fourie Consulting. Report dated: 31 May 2020.

APPENDIX 6:

TRAFFIC IMPACT ASSESSMENT

- Van Rooyen, J.M. 2020. **Proposed Retail Development on President Park X6, eMalahleni: Traffic Impact Assessment Report.** Report prepared by: EDL Engineers (Pty) Ltd. Report dated: October 2020. Project number: 20059.

APPENDIX 7:

PUBLIC PARTICIPATION PLAN

- AdiEnvironmental cc. 2020. **Public Participation Plan for the Development of a Retail Centre on Erven 20, 21 and 22 of President Park X6, eMalahleni (Witbank).** Report prepared by: AdiEnvironmental cc. Report dated: July 2020.

APPENDIX 8:

ADVERTISING OF THE PROJECT

- A copy of the advertisement published in the Witbank News, 24 July 2020.
- A copy of the on-site notice
- Printout of company website page www.adienvironmental.co.za – Document Downloads (Notice to Interested and Affected Parties; Background Information Document).
- Printout of the Ward 34 Facebook Page (23 July 2020).
- E-mail from D. Wessels (Leads2Business) (dated: 14 August 2020) to AdiEnvironmental cc.

APPENDIX 9:

BACKGROUND INFORMATION DOCUMENT

APPENDIX 10:

CORRESPONDENCE WITH AUTHORITIES

- E-mail from AdiEnvironmental cc (AdiEnv) (dated: 23 July 2020) to:

AUTHORITY/ STAKEHOLDER	CONTACT PERSON
Department of Agriculture, Forestry and Fisheries	Mashabela, F
Department of Agriculture, Rural Development, Land and Environmental Affairs - Directorate: Land Use and Soil Management – Ermelo	Venter, J
Department of Co-Operative Governance and Traditional Affairs	Loock, M
Department of Mineral Resources	Mathavhela, S
Department of Rural Development and Land Reform (Commission on Restitution of Land Rights)	Mkhonto, T
Department of Water and Sanitation	Ndlhovu, T
Mpumalanga Tourism and Parks Agency	Narasoo, K

- E-mail from AdiEnv (dated: 23 July 2020) to:

Eskom Distribution	Ludere, T
Eskom Transmission	Motsisi, L
South African National Roads Agency (SANRAL)	Bota, V; Van der Linde, I; Schmid, K
South African Civil Aviation Authority (SACAA)	Mthapo, K
Telkom	Smit, J
Trans African Concessions (TRAC)	Davis, C; Nkosi, R

- E-mail from C. Davis (TRAC) (dated: 23 July 2020) to AdiEnv.
- E-mail from AdiEnv (dated: 23 July 2020) to C. Davis (TRAC).
- E-mail from AdiEnv (dated: 27 July 2020) to C. Davis (TRAC).
- E-mail from I. van der Linde (SANRAL) (dated: 27 July 2020) to AdiEnv.
- E-mail from AdiEnv (dated: 28 July 2020) to I. van der Linde (SANRAL).
- E-mail from K. Schmid (SANRAL) (dated: 28 July 2020) to AdiEnv.
- E-mail from AdiEnv (dated: 28 July 2020) to K. Schmid (SANRAL).
- E-mail from K. Schmid (SANRAL) (dated: 28 July 2020) to AdiEnv.
- E-mail from AdiEnv (dated: 28 July 2020) to K. Schmid (SANRAL.

- E-mail from AdiEnv (dated: 13 August 2020) to P. Nkosi (Mpumalanga Tourism and Parks Agency (MTPA)).
- Webpage printout (dated: 21 July 2020): South African Heritage Resources Information System (SAHRIS).
- Letter from the South African Heritage Resources Agency (SAHRA) (dated: 26 August 2020; Ref: 15280) to AdiEnv.

- E-mail from AdiEnv (dated: 23 July 2020) to:

Nkangala District Municipality	Links, S; Thwala, A
Steve Tshwete Local Municipality	Nkabinde, E
Councillor Ward 34	Steyn, L

- E-mail from L. Steyn (Councilor Ward 34) (dated: 23 July 2020) to AdiEnv.
- E-mail from AdiEnv (dated: 9 September 2020) to O. Riba (eMalahleni Local Municipality).

APPENDIX 11:

CORRESPONDENCE WITH INTERESTED AND AFFECTED PARTIES

- E-mail from AdiEnv (dated: 23 July 2020) to:

Property	Landowner/Contact person
Builders Warehouse	F. van Dyk
Casa Portuguesa Restaurant	P. Manarte
CTM	A. Ndala
Del Judor X4 Neighbourhood Watch	S. White
Highveld Mall	C. Bendall
Highveld View Estate (CSI Rentals)	J. Laas
Indlela Lodge	W. Cillie
Jerobi Trailers	B. Ellis
Jonsson Workwear	J. Loots
Leads2Business	D. Wessels
Portuguese Club and Witbank Nissan	M. da Cunha
Witbank Baptist Church	K. Buchan-Smith

- E-mail from AdiEnv (dated: 4 August 2020) to H. Sepuba (Builders Warehouse).
- E-mail from AdiEnv (dated: 23 July 2020) to Indlela Lodge.
- E-mail from S. van der Walt (Resilient REIT (Ltd (Highveld Mall) (dated: 27 July 2020) to AdiEnv.
- E-mail from AdiEnv (dated: 27 and 29 July 2020) to S. van der Walt (Resilient REIT (Ltd (Highveld Mall)).
- E-mail and completed comment sheet from S. Bloy (dated: 3 September 2020) to AdiEnv.
- E-mail from AdiEnv (dated: 3 September 2020) to S. Bloy.

APPENDIX 12:

STORM WATER MANAGEMENT PLAN

- Van Rooyen, J.M. 2021. **Proposed Retail Development on President Park X6, eMalahleni: Stormwater Management Plan.** Report prepared by: EDL Engineers (Pty) Ltd. Report dated: April 2021. Project number: 20059.

APPENDIX 13:

ZONING CERTIFICATES