

BASIC ASSESSMENT REPORT

In terms of Section 24 and 24(D) of NEMA (Act No. 107 of 1998)

for:

Environmental Impact Assessment for the proposed establishment of a mixed use development (8.4232ha) with associated services on land previously used for Agricultural purposes on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

NWP/EIA/35/2020

Report Date: October 2020

Designated Officer: Mr. Robert Nemanashi



Compiled by:

AB ENVIRO-CONSULT CC

7 Louis Leipoldt Street

Potchefstroom

2531

Tel: + 27 (71) 202 4027

Fax: + 27 (18) 293 0671

E-mail: hannieduplooy@abenviro.co.za

Compiled for:

Fuller Developments Pty Ltd



DRAFT REPORT

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Project applicant:	Fuller Developments Pty Ltd		
Trading name (if any):	Fuller Developments		
Contact person:	Jannie Heydenrych		
Physical address:	Plot 143, 60 Wynne Street, Potchefstroom, 2531		
Postal address:	PO Box 507		
Postal code:	2520	Cell:	0827758448
Telephone:	0182909868	Fax:	0182908572
E-mail:	jannie@fullercivils.co.za		

Landowner:	Fuller Developments Pty Ltd		
Contact person:	Elizma Fuller		
Postal address:	PO Box 507, Potchefstroom		
Postal code:	2520	Cell:	082 775 8448
Telephone:	018 290 9868	Fax:	018 290 8572
E-mail:	elizma@fullercivils.co.za		

Environmental Assessment Practitioner (EAP):¹	AB Enviro Consult CC		
Contact person:	Mrs. Hannie du Plooy		
Postal address:	7 Louis Leipoldt Street		
Postal code:	2531	Cell:	071 202 4027
Telephone:	018 294 5005	Fax:	018 293 0671
E-mail:	hannieduplooy@abenviro.co.za		

EXECUTIVE SUMMARY

Fuller Developments Pty Ltd has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed establishment of a mixed use development (8.4232ha) with associated services on land previously used for Agricultural purposes on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

The detailed environmental assessment for the proposed development, has not found any environmental impacts that *cannot* be mitigated to acceptable and manageable levels.

The proposed development falls within the JB Marks Local Municipality's area of jurisdiction and the Dr Kenneth Kaunda District Municipality. The site is located on the south-eastern outskirts of Potchefstroom just north of the eastern end of Wynne Street (Baillie Park) and is approximately 1343m above sea level. Plate flow is the dominant drainage pattern, with no drainage channels intersecting the site with drainage occurring in an eastern direction.

The site is located on land that has been ploughed in the past and consists of fodder crop. The development area is surrounded by already established and ongoing urban residential development and as a result the larger area has been completely altered from its original agricultural character. The site does not constitute a viable farming unit as the projected income derived from the farm is not sufficient for the farmer to cover a living wage, to fund and maintain production infrastructure and equipment, and for farming overhead costs.

It should also be noted that the site falls within an area that has been earmarked for residential development by the Local Municipality, does not constitute *leap frogging* as it is located adjacent to existing residential developments

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. No cultural heritage (archaeological and/or historical) sites, features and material resources were identified by the Specialist during his field assessment.

The Spatial vision for JB Marks Local Municipality has been formulated as follows:

"To reconstruct the urban and rural framework of JB Marks Local Municipality in order to create an integrated and sustainable city by capitalizing on its strategic location and the inherent economic potential that the area has to offer".

The site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. The site is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

The proposed development will also promote integration of areas and infill development as the development will be integrated with the existing Baillie Park extensions following development and effectively uses the vacant land in the urban edge for infill planning and development. In addition the above mentioned the proposed development will maximise the use of available land by converting the agricultural property into viable residential units within the urban edge.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

The activity is listed in terms of the Regulations (in force since 4 December 2014) in terms of Section 24(M) and 44 made under section 24(5) of the National Environmental Management Act (NEMA) 1998 (Act 107 of 1998) as amended and published in Government Notice No. R 326 of 2017. The proposed development triggers the following regulations and listed activities:

Number and date of the relevant notice:	Activity No (s) and Activity Description (in terms of the relevant notice)	Description of listed activity as per project description
GN.R. 327, 7 April 2017	28 (i)	Establishment of a Mixed use residential / institutional /special development on 8.4232ha of land which was previously used for Agricultural purposes (previously ploughed in October 2010) situated on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province. The site is located within the urban edge.

The purpose of the study is therefore to determine the impacts that the environment may have on the proposed activity, as well as the possible impacts that the activity may have on the environment.

The study is being conducted according to normal scientific practices. A theoretical background review was compiled for the different variables by using available information from the literature. Field verification was undertaken and visits paid to the site to gather further information and/or to verify information. It also includes the identification of *key interest groups*, both governmental and non-governmental, and to establish good lines of communication. Specialist studies were undertaken to determine the impacts on sensitive areas and to determine whether the proposed project can be sustainably implemented. The specialists will also advise on mitigation measures where applicable.

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1. INTRODUCTION

Fuller Developments Pty Ltd has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed establishment of a mixed use development (8.4232ha) with associated services on land previously used for Agricultural purposes on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

The proposed development falls within the JB Marks Local Municipality's area of jurisdiction and the Dr Kenneth Kaunda District Municipality. The site is located on the south-eastern outskirts of Potchefstroom just north of the eastern end of Wynne Street (Baillie Park) and is approximately 1343m above sea level. Plate flow is the dominant drainage pattern, with no drainage channels intersecting the site with drainage occurring in an eastern direction.

The site is located on land that has been ploughed in the past and consists of fodder crop. The development area is surrounded by already established and ongoing urban residential development and as a result the larger area has been completely altered from its original agricultural character.

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. No cultural heritage (archaeological and/or historical) sites, features and material resources were identified by the Specialist during his field assessment.

The site does not constitute a viable farming unit as the projected income derived from the farm is not sufficient for the farmer to cover a living wage, to fund and maintain production infrastructure and equipment, and for farming overhead costs.

It should also be noted that the site falls within an area that has been earmarked for residential development by the Local Municipality, does not constitute *leap frogging* as it is located adjacent to existing residential developments

The site is influenced by a number of factors that were considered for the proposed layout plan to be acceptable. These factors include the slope of the site, environmental sensitivity, service provision, erf size, access, road layout and community facilities as well as the geotechnical features presented in the Geotechnical Report. To ensure that the proposed development do not infringe on any design principles and the environmental sensitive areas, development of residential units will only be allowed to take place according to the prescribed methods.

1.1 THE BASIC ASSESSMENT PROCESS

The purpose of this document is to adhere to the requirements for compilation of Basic Assessment Reports as amended and published in Government Notice R. 326 of 7 April 2017, Appendix 1, and the National Environmental Management Act (Act 107 of 1998) (NEMA).

1.2 DESCRIPTION OF THE PROCESS FOLLOWED

In order to assess a proposed development it is important to take into consideration the principles of NEMA. These principles are outlined in Chapter 1 and read as follows:

- 1) *"The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and—*

- a. *shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination;*
 - b. *serve as the general framework within which environmental management and implementation plans must be formulated;*
 - c. *serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment;*
 - d. *serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and*
 - e. *guide the interpretation administration and implementation of this Act, and any other law concerned with the protection or management of the environment.*
- 2) *Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.*
- 3) *Development must be socially, environmentally and economically sustainable.*
- 4) (a) *Sustainable development requires the consideration of all relevant factors including the following:*
- (i) *That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
 - (ii) *that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;*
 - (iii) *that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;*
 - (iv) *that waste is avoided. or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;*
 - (v) *that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;*
 - (vi) *that the development use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;*
 - (vii) *that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and*
 - (viii) *that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.*
- (b) *Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.*

- (c) *Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.*
- (d) *Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.*
- (e) *Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.*
- (f) *The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation and participation by vulnerable and disadvantaged persons must be ensured.*
- (g) *Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge.*
- (h) *Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.*
- (i) *The social, economic and environmental impacts of activities, including disadvantages and benefits must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment.*
- (j) *The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.*
- (k) *Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.*
- (l) *There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.*
- (m) *Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.*
- (n) *Global and international responsibilities relating to the environment must be discharged in the national interest.*
- (o) *The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.*
- (p) *The costs of remedying pollution, environmental degradation consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.*
- (q) *The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.*

(r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.”

The above mentioned principals and the applicable legislation, Policies and Guidelines as described in Paragraph 5 of this Report were taken into account in the assessment of the Environmental Impacts for the proposed development. The process followed can be described as follows:

- 1) The EAP was contracted by Fuller Developments Pty Ltd as their Independent Environmental Assessment Practitioner.
- 2) A Geotechnical Engineer was appointed to determine whether the Geology and Soils of the site is suitable for the proposed development
- 3) Civil Engineers were appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services as well as a Traffic impact assessment to determine the expected peak hour traffic and to quantify as well as evaluate its impact on the existing road network and suitability of the access to the different phases of the development.
- 4) A Town and Regional Planner designed the proposed development in such a way that the layout of the proposed development, takes into account the measures described by the Civil Engineer and that the layout satisfies the needs of future occupiers of the site.
- 5) A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
- 6) An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
- 7) Desk top studies were conducted and alternatives assessed.
- 8) Site inspections were carried out to verify the outcomes of the desktop studies, and the preferred alternative defined.
- 9) A full Public Participation Process is being followed to obtain inputs from interested and affected parties.
- 10) All the information obtained from the above mentioned processes is being used to assess the Environmental Impact that the proposed development may have on the Environment and vice versa.
- 11) The inputs from Specialists, interested and affected parties, together with the knowledge of the EAP is being used to determine measures to avoid, mitigate and manage potential impacts. These measures are described in the Environmental Management Programme.

1.3 ASSESSMENT PHASE

The assessment phase included the necessary investigations to assess the suitability of the identified site and its surrounding environment, for the development proposal. The assessment phase described the “status quo” of the bio-physical, social, economic and cultural environment, and identifies the anticipated environmental aspects associated with the proposed development. The assessment phase included the identification of *key interest groups*, (both government and non-government), and strived to establish efficient and effective communication. Identifying and informing Interested and affected parties of the proposed development may have an impact on the focus of the EIA. (S. Cliff, 2015).

This phase also determines the *significance of the impact* of the proposed activity on the surrounding Environment. During this phase, a Basic Assessment Report (BAR) is compiled, and, following public review, is submitted to the approving authority – the DEDECT.

The purpose of the Basic Assessment Report is to document the outcome of the Assessment Phase of the project. The report fulfilled the requirements of the EIA Regulations (2014) for the documentation of the Basic Assessment Process. The Report was compiled in accordance with Section 21(3) of NEMA's 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017.

The Draft Basic Assessment Report will be submitted to DEDECT on 16/10/2020

1.3.1 Objective of the basic assessment process

The objective of the basic assessment process is to, through a consultative process-

- (a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;
- (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 within sites 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 to; and
 - (ii) 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;
 - (cc) can be avoided, managed or mitigated; and
- (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.

1.3.2 Scope of assessment and content of basic assessment reports

The BAR assesses those identified potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with the project design, construction, and operation phases, and recommends appropriate mitigation measures for potentially significant environmental impacts. The Environmental impacts are assessed both before and after mitigation to determine:

- The significance of the impact despite mitigation; and
- The effectiveness of the proposed mitigation measures.

The BAR addresses potential environmental impacts and benefits associated with all phases of the project, including design, construction and operation, and aims to provide the environmental authorities with sufficient information to make an informed decision regarding the proposed project.

Table 1 below provides a summary of the legislative requirements in terms of a Basic Assessment Report as stipulated in Section 23 of the 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017. Cross-references are provided in terms of the relevant section within this BA Report where the NEMA and BA Report requirements have been addressed.

Table 1: Basic Assessment Report content as per Section 23 of NEMA’s 2014 EIA Regulation (GN R. 982) as amended and published in Government Notice R. 326 of 7 April 2017 Appendix 1.

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:

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Location in this report
Appendix 1, section 3 (a)	Details of the EAP who prepared the report; and the expertise of the EAP;	Paragraph 2
Appendix 1, section 3 (b)	The location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, 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, coordinates of the boundary of the property or properties	Paragraph 4 Paragraph 4 Paragraph 4
Appendix 1, section 3 (c)	A plan which locates the proposed activity or activities applied for, 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;	Appendix A1 and Appendix A2 Paragraph 4
Appendix 1, section 3 (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;	Paragraph 3 Paragraph 3
Appendix 1, section 3 (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 explanation of how the proposed development complies with and responds to the legislation and policy context	Paragraph 5.1 Paragraph 5.2 Paragraph 5.2
Appendix 1, section 3 (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.	Paragraph 6

Section of the EIA Regulations, 2014	Description of EIA Regulations Requirements for Basic Assessment Reports	Location in this report
	(iii) the extent and duration of the impact and risk;	Paragraph 9
	(iv) the probability of the impact and risk occurring;	Paragraph 9
	(v) the degree to which the impact and risk can be reversed;	Paragraph 9
	(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and	Paragraph 9
	(vii) the degree to which the impact and risk can be mitigated;	Paragraph 9
Appendix 1, section 3 (k)	Where applicable, a summary of the findings and recommendations of 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 assessment report;	Paragraph 11
Appendix 1, section 3 (l)	An environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment; (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;	Paragraph 12.2 and 12.2 Figure 2 Paragraph 12
Appendix 1, section 3 (m)	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr	Paragraph 11 and 12
Appendix 1, section 3 (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	Paragraph 3.1.2.1
Appendix 1, section 3 (o)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed	Paragraph 1.4.3
Appendix 1, section 3 (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	Paragraph 12.4
Appendix 1, section 3 (q)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised	Not Applicable
Appendix 1, section 3 (r)	An undertaking under oath or affirmation by the EAP in relation to- (i) The correctness of the information provided in the report; (ii) The inclusion of the comments and inputs from stakeholders and interested and affected parties; and (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.	Paragraph 13 Paragraph 13 Paragraph 13 Paragraph 13
Appendix 1, section 3 (s)	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts.	Not Applicable
Appendix 1, section 3 (t)	Any specific information that may be required by the competent authority.	Not Applicable
Appendix 1, section 3 (u)	Any other matters required in terms of section 24(4)(a) and (b) of the Act	Not Applicable

1.3.3 Assumptions, uncertainties, limitations and gaps in knowledge:

This report is based on current available information and, as a result, the following limitations and assumptions are implicit –

The report is based on the *project description* provided by the Applicant as a result of reports that was compiled by the following Specialists:

- A Geotechnical Engineer was appointed to determine whether the Geology and Soils of the site is suitable for the proposed development.
- A Town and Regional Planner designed the proposed development in such a way that the layout of the proposed development takes into account the measures described by the Civil and Traffic Engineers and that the layout satisfies the needs of future occupiers of the site
- Civil Engineers were appointed to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services, Traffic Engineers have been appointed to ensure the suitability of the accesses and roads.
- A SAHRA Specialist has been appointed to determine the possible impact of the development on Archaeological and Cultural features.
- An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
- Desktop studies were conducted and alternatives assessed.

Descriptions of the biophysical and social environments are based on specialist fieldwork, investigations, and the Public Participation Process.

2. DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

AB Enviro Consult (CC) is a registered consultancy, owned and operated as an independent unit by the registered owner and consultant: **Prof. A.B. de Villiers**

- **Mr J.P. De Villiers** joined the consultancy during 2004
- **Mrs J.E. du Plooy** is a consultant since 2001

EXPERIENCE OF THE CONSULTANCY

Over a period of 24 years (1996-2020) this consultancy has successfully applied for, and obtained positive ROD's and EA's for more than 375 projects. Environmental Control Officer's duties are also performed on various projects.

The company was involved (from 1992-1994) in evaluation of 114 applications for the subdivision of land, 23 applications for resort developments, and 54 applications for business rights for the Department of Agriculture, Conservation and the Environment - North West Province.

The consultancy is qualified to undertake professional studies in waste management and is still involved in the development of waste disposal- (solid and liquid effluent), and emission studies. These studies are conducted both academically and practically. This work relates to mine waste, domestic waste and effluent as well as to the monitoring of waste disposal. Environmental audits in this respect are undertaken on a regular basis.

PERSONAL PARTICULARS AND CAREER HISTORY OF PROF DE VILLIERS

Name : ABRAHAM BAREND (BRAAM) DE VILLIERS
 Date of birth : 1944/01/26
 Telephone : (018) 294-5005
 Fax : (018) 293-0671
 Electronic mail : brama@abenviro.co.za
 Address : 7 LOUIS LEIPOLDT STREET
 POTCHEFSTROOM
 2531

Lecturer & Professor – Potchefstroom University 1969- 2004

ACADEMIC AND PROFESSIONAL QUALIFICATIONS

Post–Matric Qualifications

YEAR	Qualification	Institution	Field of Study
1968	B.Sc.	PU FOR CHE	Geography, Geology
1970	HONNS. B.Sc.	PU FOR CHE	Soil Science
1974	M.Sc.	PU FOR CHE	Geography
1981	Ph.D.	UOFS	Geography

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

YEAR	Qualification/ Registration	Institution	Field of Study
1986	Professional Natural Scientist	S.A. Council for Natural Scientists	Environmental Science
1994	Quality Auditor	ESKOM	Auditing
1998	Personnel & Verifying Auditor	SAATCA	Environmental Auditing
2006	Environmental Assessment Practitioner	Interim Certification Board EAPSA	Environmental Science

MEMBERSHIP AND PARTICIPATION IN SOCIETIES, COUNCILS, ETC.

Name of professional societies	YEAR	Capacity
S.A. Geographical Society.	1967-1996	Board Member
Society for Geography	1968-2004	Member
SAGS Western Transvaal	1985-1989 1987-1989 1996	Chairman
Africa Geographical Association	1993-1995	Vice-President.
Society for the Vaal River Catchment	1980-1999	Member
S.A. Society for Photogrammetry, Remote Sensing and Cartography	1984-1996	Member
Dendrological Society	1986-2005	Member
Birdlife South Africa	2003-present	Member
British Geomorphological Research Group	1985-1997	Member

Int Com on Water Resource Systems	1985-1997	Member
Int Com on Continental Erosion	1986-1990	Member
Int Com on Remote Sensing and Data Transmission	1986-1991	Member
Society for S.A. Geographers	1995-2005	Member
SA Photogrammetrical and Geo. Info.	1995-2003	Member
S.A. Association of Geomorphologists	1994-1999	Board Member and member
SADC Mine Dump Study Group	1996-2005	Member

***Chairman of the Committee for Interested and Affected Parties (CIP) (2004-2008)** for International Accreditation by the influential accrediting body of **Price, Waterhouse Coopers- International Environmental Auditors in Southern Africa.**

Member of Price Waterhouse Coopers CIP (2004-2010)

1. ACADEMIC courses taught AT POST-MATRIC LEVEL

- 1.1 The Geography of Economic Activities and Regional Geography (3rd year and honours students)
- 1.2 Weather and Climate (1st, 2nd, and 3rd year students)
- 1.3 Geomorphology (1st year up to PhD level)
- 1.4 Remote Sensing and the Environment (3rd year and Honours)
- 1.5 Quantitative Geography (3rd year up to Masters Level)
- 1.6 Environmental Management (2nd year, up to PhD level)
- 1.7 Environmental Analysis (3rd year and up to Masters Level)
- 1.8 Geography of Soil (3rd year and Honours)
- 1.9 Cartography (1st year to Honours)
- 1.10 As professor, 26 Masters & 4 PhD D students completed their studies in environmentally related subjects under his tutor- and co-tutorship.

2 INVOLVEMENT IN COURSES AND WORKSHOPS

2.1 ENVIRONMENTAL COURSES: Partially responsible for course development and taught various courses for environmental officers employed by the North West Province over a period of 3 years (1998-2001). These courses were aimed at improving their knowledge of the environment as well as their understanding of the environmental interactions specifically related to the North West province.

2.2 STATE OF THE ENVIRONMENT REPORT (SOE) Involved in the first SOE prepared by the North West Province and was responsible for most of the physical geographical aspects (1999).

3 ENVIRONMENTAL PROJECTS

The following projects are typical examples, of such projects which he co-ordinated and managed:

2.3.1 Mooi River Catchment studies: This was a study on the impacts of the mining activities on the quality and quantity of water in the Mooi River catchments and was done for the North West Province. He co-ordinated and managed this project. The team consisted of a PhD student as well as two teams of local and international students; one responsible for the biophysical variables, and the other for socio-cultural aspects.

2.3.2 SADC mine dumps study group: Acted as co-ordinator for the formulation of tools to assess the effects of mine dumps on the environment in the SADC region. One group was involved in the Zimbabwean copper belt region, and the other in the Tanzanian gold mining area. The studies were undertaken for the Carl Duisburg Gesellschaft (Germany). The research team consisted of geographers, ecologists and mining experts. From this study, a pilot program, the “South African Environmental Management System” (SEMS) developed, which was applied successfully by a team of researchers in a pilot study in the Carletonville region.

2.3.3 SADC development of training modules for environmental studies using GIS: Member of the three-person team who developed these training modules. It was applied at the Copper belt University, the University of Dar Es Salaam as well as at the Potchefstroom University as an introduction to the integration of environmental data (both biophysical and socio-economic) for the interpretation of geographical regions.

2.3.4 Environmental degradation - the result of indiscriminate location of slime dams in the SADC Region: Co-ordinated this study in the Far West Rand Area; conducted case studies in Zambia and South Africa. The team consisted of researchers from the Netherlands, Germany, Zambia and Tanzania.

2.3.5 Land use changes in the North West Province: An Environmental Management Support System for SOE North-West University Team leader. This project was undertaken for DACE (NWP) and various students participated – each involved in a specific aspect of the environment. This data was co-ordinated and eventually incorporated into the SOE report.

4 RESEARCH PUBLICATIONS AND CONFERENCES

He published 11 environmentally related articles in peer-reviewed magazines, and appeared professionally at 30 conferences with a direct bearing on environmental work.

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

<u>YEAR</u>	<u>Qualification</u>	<u>Institution</u>	<u>Field of Study</u>
1993	BA	PU FOR CHE	Geography, Economics
1994	HED	PU FOR CHE	Geography Economics
2006	B.Sc.(Honns) Cum Laude	North-West University	Environmental Management
2007	M.Sc.	North-West University	Geography

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

<u>YEAR</u>	<u>Qualification/ Registration</u>	<u>Institution</u>	<u>Field of Study</u>
2008	Basic Principles of Ecological Rehabilitation and Mine Closure	Centre for Environmental Management (North West University)	Ecological Rehabilitation
2019	Registered as Environmental assessment Practitioner	EAPASA Registration number: 2019/808	

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MRS J.E. DU PLOOY

<u>YEAR</u>	<u>Qualification</u>	<u>Institution</u>	<u>Field of Study</u>
1999	BA	PU FOR CHE	Geography, Tourism
2000	BA (Honns) Cum Laude	PU FOR CHE	Geography
2002	Master's degree in Environmental Management	PU FOR CHE	Environmental Management

2001	Aquabase Intro	AQUABASE	Hydrology
2001	Geomedia Professional	INTERTECH	GIS
2001	Map Info	SPATIAL TECHNOLOGY	GIS

PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS

<u>YEAR</u>	<u>Qualification/ Registration</u>	<u>Institution</u>
2020	Registered as Environmental assessment Practitioner	EAPASA Registration number: 2019/1573

3. DESCRIPTION OF THE ACTIVITY

The proposal comprise a mixed use development on 8.4232ha of land which has previously been used for Agricultural purposes on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

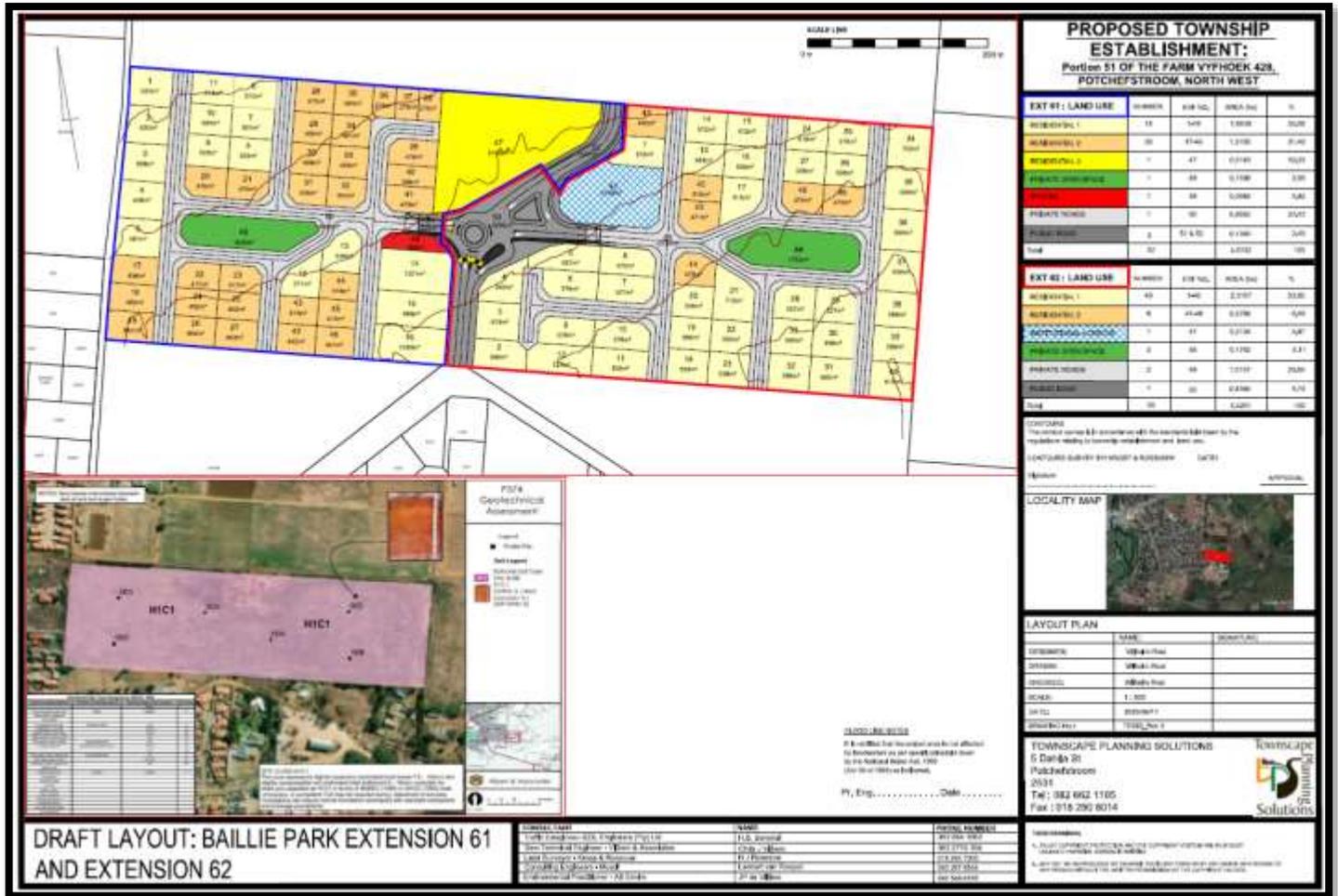


Figure1: Proposed Layout Plan

The development is proposed to comprise of:

Residential 1: 56 Erven (16 x Phase 1; 40 x phase 2)

Residential 2: 36 Erven (30 x Phase 1; 6 x phase 2)

Residential 3: 1 Erf (Phase 1)

Institutional: 1 Crèche (Phase 2)

Private Open Space: 2 (1 x Phase 1; 1 x phase 2)

Special: 1 (phase 1: Bin store)

Private and Public Roads

Streets and controlled access gates (2 phased development, each with separate access)

According to the Civil Engineer's report Services will connect to municipal infrastructure and is proposed as follows:

Water:

Water source and bulk water infrastructure:

Potchefstroom has been reliant on the Mooi River as its sole source of raw water. Water flows from the Boskop Dam north of Potchefstroom into the Lakeside Dam (Potchefstroom Dam) via the Mooi River. The municipality abstracts a combined average of 54 Mℓ/day of raw water from the Lakeside Dam and the West Bank Canal. Raw water is treated at the 60 Mℓ/day Lakeside Treatment Works and the 13 Mℓ/day Old Treatment Works. The water is subjected to conventional treatment methods to achieve prescribed water quality as stated in SANS 241. Hereafter drinking water is distributed to the Vyfhoek Reservoirs (supplying the area east of the Mooi River) and the Ventersdorp Road Reservoirs (supplying the area west of the Mooi River) respectively.

The Proposed Development will be supplied from the Vyfhoek Reservoirs, which consist of three circular concrete reservoirs with a combined capacity of 37.1 Mℓ (15 Mℓ, 13 Mℓ & 9.1 Mℓ). The static height difference between the Vyfhoek Road Reservoirs and the Proposed Development is approximately 70 meters.

Water Demand

Applying the typical water consumption quantities to the proposed land use (as prescribed by the *Guidelines for Human Settlements "Red Book"*), the estimated water demand for the intended land use of the proposed development is as follows:

Average Annual Daily Demand: 101 Kℓ

Instantaneous Peak Flow Rate (excluding fire flow): 4.6 ℓ/s

Reservoir Analysis

The Proposed Development will have a negligible impact on water storage (37.1 Mℓ Vyfhoek Road Reservoirs). The estimated daily water demand of 101 Kℓ/ day, will only have a 0.3% impact on the capacity of the bulk water storage facility. Sufficient bulk storage capacity will therefore be available for the development.

New Bulk Water Connection

An existing Ø 160 mm distribution main is located south of the Proposed Development in Wynne Street. It is proposed that a new Ø 160 mm bulk supply main is constructed from the existing Ø 160 mm distribution main in Wynne Street. In addition, a new Ø 100 mm water meter connection will be needed to comply with the fire flow requirements. The complete water meter unit will consist of two isolating valves a water meter as required by the local authority. Above ground installation of the water meter is suggested to provide easy access for maintenance and water meter readings.

A new Ø 100 mm bulk water connection is proposed, to ensure sufficient water supply and residual pressure is available to the development



Bulk Water Connection

Sewer:

Sewer Generation

Applying prescribed “Red Book” sewer flow rates, the estimated sewerage generation of the Proposed Development amounts to:

Average Daily Dry Flow : 50.5 Kℓ/d

Instantaneous Peak Wet Flow : 1.9 ℓ/s

WWTW Capacity Analysis

The hydraulic capacity of the WWTW is approximately 50 Mℓ/day. The maximum current inflow volume is recorded as 45 Mℓ/day which is 90% of the maximum design capacity during peak inflow periods. The Proposed Development will generate an estimated daily wet weather sewer volume of 58 Kℓ/d, which will take up only 0.1% of the available capacity of the plant. Sufficient capacity is therefore available for the treatment of all waste water to be generated by the Proposed Development.

New Sewer Connection

The natural topography of the site slopes towards the south eastern boundary which implies that the envisaged internal sewer network cannot be connected to the existing sewer lines on the western side of the development. As illustrated on Figure 5 hereafter, an outfall sewer line is planned for the adjacent development (Baillie Park Ext. 47).

The design of the bulk sewer outfall line of the Proposed Development is done in conjunction and planned to join to the same main outfall of the adjacent Baillie Park Ext. 54 development. The said outfall line, which connects to the existing Ø 315 mm main outfall along the irrigation canal as shown, are designed in accordance with the sewer master plan for this area. Considering the estimated expected sewer generation, the planned outfall sewer line will have sufficient capacity to accommodate the flow volumes to be generated by the Proposed Development.



Bulk Sewer Connection

Storm-water

All storm-water generated on the site currently follows the natural topography as overland flow across the stand towards the south-eastern side - dissipating into the vegetation. The Proposed Development will increase the peak storm-water runoff (1 in 2 year recurrence interval) from 89 ℓ/s to 613 ℓ/s . The concentrated storm-water runoff will have to be conveyed and discharged in an appropriate manner.

It is envisaged that the storm-water generated by the Proposed Development will be conveyed by a pipe system which is connected to the planned adjacent stormwater infrastructure. The concentrated storm-water will be discharged into natural water course south of the Proposed Development.



Storm Water Flow Patterns

Solid Waste

Municipal Solid Waste (MSW) removal is a function of JB Marks Local Municipality. The Potchefstroom community currently generates an estimated MSW volume of 108.7 ton per day. The proposed development will increase the daily MSW volume with 0.32 ton per day an overall increase of 0.17%.

The existing solid waste disposal site of Potchefstroom has adequate capacity to accommodate additional volumes of refuse to be generated by the Proposed Development. The municipal dumping site is operated and maintained by the Waste Management Department of the Local Authority in accordance with the requirements of the Department of Water & Sanitation (DWS).

Communal refuse collection areas will be provided at the controlled access gates for the two townships (Ext. 61 & Ext. 62), adjacent to the proposed traffic circle between the two townships. The municipal waste collection trucks will therefore be able to collect the refuse from the two township externally without the need to enter the secure estates

Operation and Maintenance of Services

All external municipal services namely water, sewer, roads & storm-water, as well as refuse removal shall remain a function of the Local Authority which is responsible for the operation and maintenance thereof.

Electrical Services

The Engineer has come to the following conclusions upon consideration of the availability of bulk electrical services and the impact of the proposed development on these services:

The development falls within area historically supplied with electricity form Epsilon 66/11kV substation with limited capacity. These feeders have been moved to the newly constructed CBD 132/11kV substation creating additional capacity.

The area under consideration is supplied with two main feeders (1x150mm², 3 Core, Cu, PILC) with an available firm capacity of 5MVA (installed capacity of 10MVA).

Malva, a secondary 11kV switching substation supplied from Marl, a primary 11kV switching substation was built to create additional capacity of 5MVA (installed capacity of 10 MVA) in the area under consideration.

The master plan is for Malva 11kV Switching substation to supply three areas in the eastern side by way of three closed MV rings (1x95mm², 3 Core, Al, PILC), each with an available firm capacity of 1.5MVA (installed capacity of 3MVA).

As indicated by the master plan for electrical services in the areas under consideration as well as the technical analysis a new MV feeder (1x95mm², 3 Core, Al, PILC) is to be installed from Malva 11kV switching substation up to the proposed development entering from the Southern side. This new MV feeder (1x95mm², 3 Core, Al, PILC) will be closed in the future by way of continuing with the MV feeder installation to the Northern side.

Electricity will be distributed throughout the development by way of an 400V radial network consisting of LV (Low Voltage) cable and associated distribution / metring kiosks.

Proposed Site Access

The intersection of the access road leading toward the development, and Wynne Street is proposed to be upgraded and changed into a 2-Way Stop intersection with Wynne Street having the "Right of Way". The existing concrete structure (a sluice gate) next to the current "T-Junction" intersection is to be removed (See Photograph 1). This sluice gate is no longer in use and the Civil Engineer is negotiating its removal with Water Affairs.



Photograph1: Sluice Gate to be removed

The access road leading to the study site is proposed to be surfaced (premix) for the whole length up to the study site, photograph 2 shows the access road to be surfaced.



Photograph 2: Access road to be surfaced



Proposed New Access and intersection to Wynne Street

The development is proposed to comprise two (2) Phases. Both Phases are proposed to be accessed by means of an access road running in an east / west direction within the study site boundaries, intersecting a proposed north / south through-road by means of a proposed traffic circle:



Proposed Gated Access to both phases



Each Phase is envisaged to have a Security Gate / Boom to the east or west of the proposed traffic circle, respectively. These accesses are both proposed to have one (1) entrance lane of 4m wide with 4.2m vertical clearance to allow for emergency vehicles such as fire trucks to enter the development in the case of an emergency. It is also proposed to have one (1) exit lane of 3m wide (minimum).

4. DESCRIPTION OF THE PROPERTY

The proposed development will be located on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province. The proposed development falls within the JB Marks Local Municipality's area of jurisdiction and the Dr Kenneth Kaunda District Municipality. The site is located on the south-eastern outskirts of Potchefstroom just north of the eastern end of Wynne Street in Baillie Park and is approximately 1343m above sea level. See Figure 2 for a locality map and Figure 3 for a copy of the sensitivity map. Plate flow is the dominant drainage pattern, with no drainage channels intersecting the site with drainage occurring in an eastern direction.

The study site is situated at the Grassland Biome which is represented by the Rand Highveld Grassland vegetation type (Mucina & Rutherford 2006). The site is located on land that has been ploughed in the past (See Figure 4 for a copy of a Google Earth image in this regard) and is currently planted with fodder (See Photograph 1, 2 and 3). The development area is surrounded by already established and ongoing urban residential development and as a result the larger area has been completely altered from its original agricultural character.



Photograph 3: Site is consists of fodder crop that has been recently cut.



Photograph 4: Illustration of agricultural activities on site.



Photograph 5: A small section of fodder crop is yet to be cut.

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. No cultural heritage (archaeological and/or historical) sites, features and material resources were identified by the Specialist in the study area during his field assessment.



Figure 2: Locality Map

The Surveyor-general 21-digit site reference number are:

T	0	I	Q	0	0	0	0	0	0	0	0	0	4	2	8	0	0	0	5	1
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Site Co-ordinates

Latitude (S):

Longitude (E):

Alternative S1 (preferred or only site alternative)

26°	19'	4.16"	26°	47'	14.92"
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5. LEGAL AND OTHER REQUIREMENTS

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act No. 107 of 1998 as amended.	NEMA is the guiding legislation that has been considered during the Environmental Impact Assessment process and the compilation of this Scoping Report.	National & Provincial (DEA And North West DEDECT)	27 November 1998
The Bill of Rights, Constitution of South Africa, Section 27 (1)(b)	<p>The Constitution of the Republic of South Africa is the legal source of all law, including environmental law, in South Africa. The Bill of Rights is fundamental to the Constitution of South Africa and in, section 24 of the Act, it is stated that:</p> <p>Everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.</p> <p>Given that environmental management is founded partly on the principles of public participation, Section 195 of the Constitution is of primary relevance:</p> <p>(1) Public administration must be governed by the democratic values and principles enshrined in the constitution, including the following principles: (a) (b) (c) (d) (e) Peoples needs must be responded to, and the public must be encouraged to participate in policymaking. (f) Public administration must be accountable. (g) Transparency must be fostered by providing the public</p>	National Government	1994

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	with timely, accessible and accurate information (Government Gazette, 1996).		
New Regulations 2014 in terms of NEMA	Legislation consulted during the environmental impact assessment process to determine whether any listed activities would be triggered. The Regulations were also consulted to determine inter alia the requirements regarding the contents of Scoping reports and the public participation process that should be followed.	National & Provincial (DEA And North West DEDECT)	7 April 2017
National Water Act (36 OF 1998)	<p>National Water Act (NWA), 1998 (Act 36 of 1998) is the primary statute providing the legal basis for water management in South Africa and has to ensure ecological integrity, economic growth and social equity when managing and using water.</p> <p>The major objectives of the National Water Act are to:</p> <ul style="list-style-type: none"> •Aid in providing basic human needs; •Meet the growing demand of water in a sustainable manner; •Ensure equal access to water and use of water resources; •Protect the quality of water of natural resources; •Ensure integrated management of water resources; •Foster social and economic development; and •Conserve aquatic and related ecosystems. <p>Section 19 of the National Water Act states that the person responsible for land upon which any activity is or was performed which causes, has caused or is likely to cause, pollution of a water resource, must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring.</p>	Department of water and sanitation	1998
National Environmental Management: Biodiversity Act (NEMBA) (ACT NO. 10 OF 2004)	<p>The National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004), provides 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 bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith.</p> <p>In terms of Chapter 4 of the Above Act:</p>	National & Provincial (DEA And North West DEDECT)	2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	<p>52. (1) (a) The Minister may, by notice in the Gazette, publish a national list of ecosystems that are threatened and in need of protection.</p> <p>(b) An MEC for environmental affairs in a province may, by notice in the Gazette, publish a provincial list of ecosystems in the province that are threatened and in need of protection.</p> <p>(2) The following categories of ecosystems may be listed in terms of subsection:</p> <p>(a) critically endangered ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;</p> <p>(b) endangered ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;</p> <p>(c) vulnerable 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; and</p> <p>(d) protected ecosystems, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed in terms of paragraphs (a), (b) or (c).</p> <p>(3) A list referred to in subsection (1) must describe in sufficient detail the location of each ecosystem on the list.</p> <p>53 (1) The Minister may, by notice in the Gazette, identify any process or activity in a listed ecosystem as a threatening process.</p> <p>(2) A threatening process, identified in terms of subsection (1) must be regarded as a specified activity contemplated in section 24(2)(b) of the National Environmental Management Act (1998) and a listed ecosystem must be regarded</p>		

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	as an area identified for the purpose of that section.		
National Environmental Management: Protected Areas Act (ACT NO. 57 OF 2003)	<p>This Act aims to provide for a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity. The Protected Areas Act tries to ensure the protection of the entire range of biodiversity, referring to natural landscapes and seascapes. The Act makes express reference to the need to move towards Community Based natural Resource Management (CBNRM) as its objectives include promoting the participation of local communities in the management of protected areas. The purpose of the Act is:</p> <ul style="list-style-type: none"> •To protect ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes and their ecological integrity. •To conserve biodiversity in those areas; •To protect South Africa's rare species; •To protect vulnerable or ecologically sensitive areas; •To assist in ensuring the sustained supply of environmental goods and services; •To provide for the sustainable use of natural and biological resources; •To create or augment destinations for nature-based tourism; •To manage the interrelationship between natural environmental biodiversity, human settlement and economic development; •To contribute to human, social, cultural, spiritual and economic development; •To rehabilitate and restore degraded ecosystems and promote the recovery of endangered and vulnerable species. <p>This Act further stipulates various criteria which must be met before an area can be declared as a special nature reserve, national park, nature reserve and protected environment. It also prescribes a range of procedures, including consultation and public participation procedures which must be followed before any of the kinds of protected areas are declared.</p>	National & Provincial (DEA And North West DEDECT)	2003
National Heritage Resources Act, Act No. 25 of 1999	Legislation consulted during the impact assessment process, to determine the legal requirements relating to the management of heritage resources that are present in and around the site.	SAHRA	1999
National Environmental Management: Waste Act, Act No. 59 of 2008, read together with	Legislation consulted to determine whether a waste licence will have to be obtained for the development.	National & Provincial (DEA And North West DEDECT)	2008

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
the List of Waste Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment, GN No. 921 of 29 November 2013			
<i>Mineral and Petroleum Resources Development Act (MPRDA), Act 28 of 2002</i>	<p>The Act distinguishes between mining permits and mining rights as follows:</p> <p>Mining Permit: Required where the activity will last less than two years and affects an area of less than 1.5ha in extent (valid for 3 years). In terms of the Act a mining permit requires a submission of an Environmental Management Plan (EMP to DME for approval prior to the onset of activities).</p> <p>Mining Right: Required for larger mining operations (renewable and valid for 30 years). In terms of the Act a mining right requires the submission of an Environmental Management Programme (EMProg) to DME for approval prior to the onset of activities.</p> <p>In light of their limited spatio-temporal extent, borrow pits (for the provision of construction material) and quarry operations would typically require a mining permit.</p> <p>The closure of borrow pits requires the submission of a closure application; this must be submitted within 180 days after ceasing operations. It is important to recognise that the mining right/permit holder's liability persists until such time as a Closure Certificate has been issued by DME.</p>	Relevant Provincial Authorities.	2002
<i>National Environmental Management: Air Quality Act (Act 39 of 2004)</i>	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. Construction activities may cause some air pollution.	Relevant Provincial Authorities.	2004
<i>The Conservation of Agricultural Resources Act (Act 43 of 1983)</i>	This Act regulates the flow pattern of runoff water, control of weeds and invader plants.	Relevant Provincial Authorities.	1983
<i>National Veldt and Forest Fire Act (Act 101 of 1998)</i>	Chapter 4 places a duty on owners to prepare and maintain firebreaks.	Relevant Provincial Authorities.	1998
<i>National Forests Act, Act 84 of 1998 (NFA) read with GN1602 of December 2016.</i>	During the construction phase of the development certain protected trees may be affected. Licences will have to be obtained from the Minister before the affected trees may be cut, disturbed, damaged or destroyed. GN1602 of December 2016 contains the list of protected trees.	National and Provincial authorities.	1998

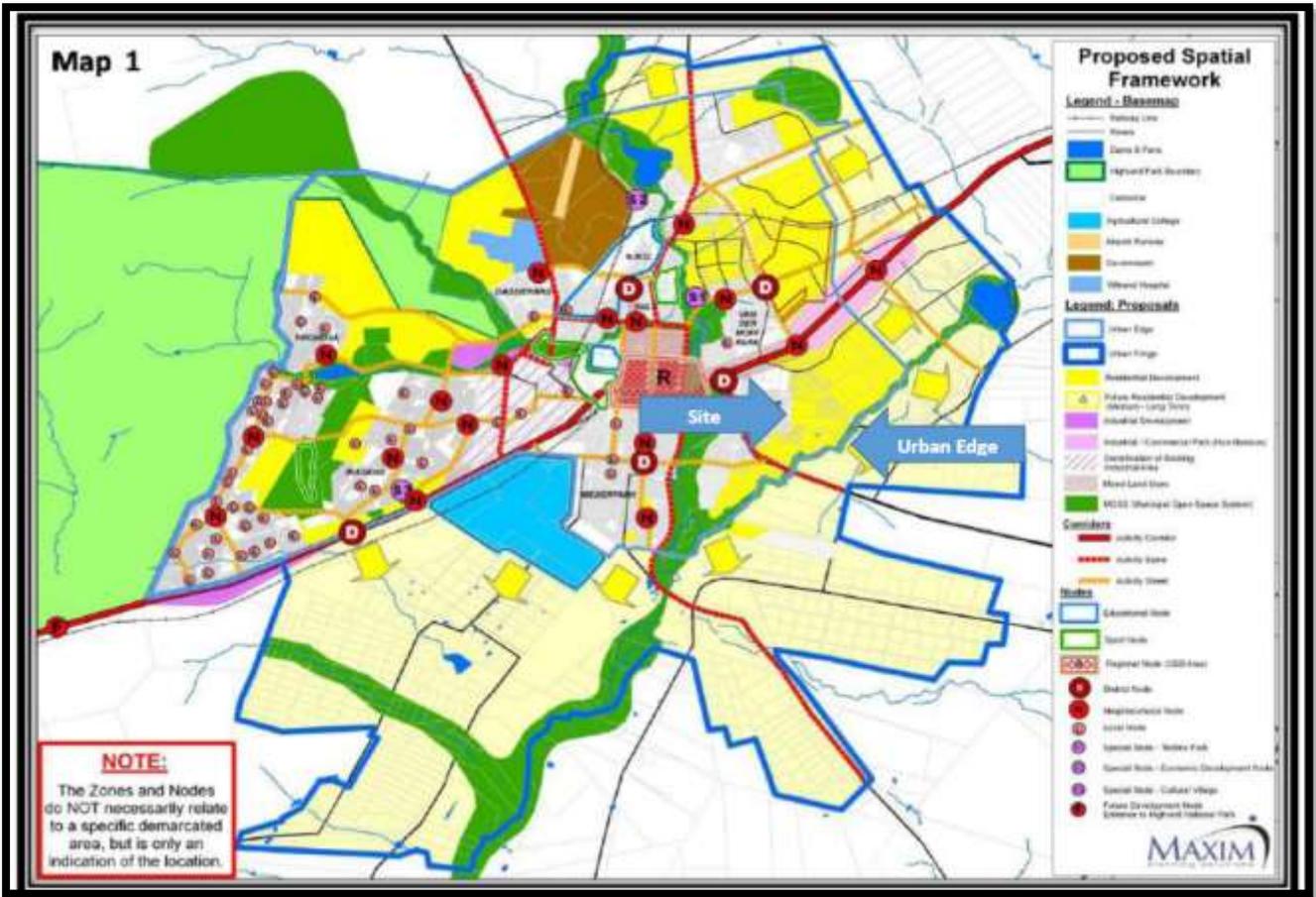
Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
<i>Occupational Health and Safety Act (Act 85 of 1993)</i>	To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery and the protection of persons other than persons at work against hazards to health.	Relevant Provincial Authorities.	1993

5.2 (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 explanation of how the proposed development complies with and responds to the legislation and policy context

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO	Please explain
The site is currently zoned Agricultural.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
<p>According to the North West Spatial Development Framework (2016) there is a massive demand for urban and peripheral urban land and requires strong, integrated and transparent land use planning and management systems at a local level, where potential land use conflicts can be resolved. At least 10 000 ha should be made available for development over the next 20 years, of which a large segment should be focused on private sector investment.</p> <p>It is vital that strong and integrated settlement planning capacity is built at local level to provide well planned, located and serviced urban and peripheral urban sites. The proposed development is planned and will be developed in accordance with these guidelines.</p> <p>According to the NWSDF JB Marks Local Municipality is identified as a Priority One Investment Area, focusing on main economic growth areas for prioritized development spending. The purpose of Intervention Zone One is the strengthening and consolidating a hierarchy of nodes in terms of:</p> <ul style="list-style-type: none"> • Areas currently representing existing spatial concentrations of economic activity • Areas showing future potential for development expansion in terms of economic growth • Areas that play a supportive role to existing and future economic development areas 			

(b) Urban edge / Edge of Built environment for the area	YES	NO	Please explain
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(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES	NO	Please explain
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As indicated on the Map above, the site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. As can be seen above, the application site is situated in an area that is transitioning to a residential character. The proposed development is in line with this development trend.

(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
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As indicated on the Map above, the site is located within the Urban Edge of the Municipality. It is clear from the map that the application site is located in an area earmarked for future residential development. Several township establishment applications have been submitted for surrounding areas.

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES	NO	Please explain
No EMF has been approved for the area.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
<p>The Spatial Planning and Land Use Management Act, Act 16 of 2013, (SPLUMA) came into operation on the 1st of July 2015 and has changed the Planning profession to such an extent that Planning can no longer be used as a tool to separate people and communities. The objectives are:</p> <ul style="list-style-type: none"> • <i>provide for a uniform, effective and comprehensive system of spatial planning and land use management for the Republic;</i> • <i>ensure that the system of spatial planning and land use management promotes social and economic inclusion;</i> • <i>provide for development principles and norms and standards;</i> • <i>provide for the sustainable and efficient use of land;</i> • <i>provide for cooperative government and intergovernmental relations amongst the national, provincial and local spheres of government; and</i> • <i>Redress the imbalances of the past and to ensure that there is equity in the application of spatial development planning and land use management systems.</i> <p>SPLUMA's desired outcomes:</p> <ul style="list-style-type: none"> ▪ Coherent regulatory framework; ▪ Constitutional synergy (clear delineation, distribution & allocation of powers among spheres); ▪ Predictable and transparent regulatory system; and ▪ Clear, rational and efficient inter-linkages of sectoral and intersphere planning tools and policies. <p>The following guidelines are given for Land Use Management:</p> <ul style="list-style-type: none"> ▪ Land resources are used for a variety of purposes which interact and may compete with one another; therefore, it is desirable to plan and manage all uses in an integrated manner. ▪ Land use management examines all uses of land in an integrated manner, it makes it possible to minimize conflicts, to make the most efficient trade-offs and to link social and economic development with environmental protection and enhancement, thus helping to achieve the objectives of sustainable development. ▪ The essence of the integrated approach finds expression in the coordination of the sectoral planning and management activities concerned with the various aspects of land use and land resources. ▪ Integration should consider all environmental, social and economic factors. 			

- Integrated consideration facilitates appropriate choices and trade-offs, thus maximizing sustainable productivity and use.

The broad objective is to facilitate allocation of land to the uses that provide the greatest sustainable benefits and to promote the transition to a sustainable and integrated management of land resources.

Provincial Priority 4 states the following:

- Address the apartheid geography and create the conditions for more humane – and environmentally sustainable – living and working environments.
- It is important to address the entrenched spatial patterns that exacerbate social inequality and economic inefficiency, cognisant of the unique needs and potentials of different rural and urban areas in line with emerging development corridors.
- Active citizenship in spatial development should be supported through properly funded interventions that encompass citizen-led neighbourhood vision and planning processes; and the introduction of social compacts.
- Settlement planning should ensure the creation of spaces that are liveable, equitable, sustainable, resilient and efficient, and that support economic opportunities and social cohesion.

The proposed development complies with the principles as set out above in the sense that the proposed development will contribute to economic growth in the area.

3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?

YES

NO

Please explain

As indicated on the Map above, the site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. As can be seen above, the application site is situated in an area that is transitioning to a residential character. The proposed development is in line with this development trend.

The following spatial objectives are listed in the SDF regarding residential development in the municipal area:

Accelerate housing delivery within the context of sustainable human settlements

- The proposed development aims to create viable residential stands within the urban edge of Potchefstroom.

Ensure that housing delivery **reflect community level concerns** about housing demands

- Thorough public participation will be conducted in this regard.

Promote integration of areas and infill development

- The application site will be integrated with the existing Baillie Park extensions following development and effectively uses the vacant land in the urban edge for infill planning.

Ensure conditions not conducive to health and safety of the inhabitants are prevented and removed

- Caution was taken in the layout process to promote the health and safety of future residents.

Promote densification of land.

- The proposed development maximises the use of available land by converting the agricultural property into viable residential units within the urban edge of the municipality.

Develop **supporting social and economic infrastructure** with all new housing projects to move away from just housing to sustainable human settlement development

- The application is located in close proximity to existing social and economic infrastructure.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged and approved by the local authority.

4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES	NO	Please explain
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Sustainable housing must be seen as one of the major cogs of sustainable cities. Although Potchefstroom does not have an explicit sustainable-urban development policy, it has started to articulate some of the key features of such a policy. Some of the starting points are evident in the Integrated Development Planning and Spatial development processes. Participation in the national and international initiatives such as Local Agenda 21 is another positive indicator of working towards a sustainable urban development. However, a comprehensive sustainable urban development needs to be anchored on a city-wide commitment to apply sustainable city principles in all spheres of urban planning and programmes. Such principles would address integrated development, good urban governance and management (institutional and financial).

Integrated planning would be aimed at enhancing synergetic linkages of needs as well as a resource-conserving approach to addressing such needs. Integrated land-use planning, social-economic integration, alleviation of poverty and inequalities should be key objectives of such planning.

Good governance entails transparent and participatory processes in decision making, setting up of relevant and adequate institutional structures, good practices in budgeting and financial management and systematic procedures for decision making.

Mixed land use, is one of the most prominent development – planning paradigm in towns due to the shortage of land as a commodity. Residential densification is evident in most towns throughout South Africa. This can be contributed due to growth and simultaneously the increase in the population.

More intensive utilisation of large uneconomical portions, located within areas where fully fleshed services and infrastructure became an obvious solution for the housing shortage in most towns and cities.

This is also the case in Potchefstroom and it is for this reason why the SDF approves the principle of “infill” development. Due to all elements of densification, Potchefstroom can rapidly develop into a holistic, quality urban environment in such a manner that leads to regeneration and redistribution of residential neighbourhoods that builds a local capacity which would improve the living standards of people living in the area.

Densification in Potchefstroom has and still do occur in different elements such as:

- Construction of second dwellings on single residential erven;

- Conversation of existing dwellings to accommodate additional families
- The development of townhouses and townhouse complexes, and
- The development of high rise dwellings

The concept of densification as an over-riding concept has a few positive impacts on existing areas, such as:

- The better utilization of infrastructure and services
- To create more compact towns and cities which would be more economical viable.
- The better utilisation of land as a commodity
- It could lead to urban renewal which would increase the market value of the surrounding properties
- It should be seen as an instrument to solve the housing problem in South Africa.

5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development?

YES

NO

N/A
Please explain

According to the Civil Engineer's report Services will connect to municipal infrastructure and is proposed as follows:

Water:

Water source and bulk water infrastructure:

Potchefstroom has been reliant on the Mooi River as its sole source of raw water. Water flows from the Boskop Dam north of Potchefstroom into the Lakeside Dam (Potchefstroom Dam) via the Mooi River. The municipality abstracts a combined average of 54 Mℓ/day of raw water from the Lakeside Dam and the West Bank Canal. Raw water is treated at the 60 Mℓ/day Lakeside Treatment Works and the 13 Mℓ/day Old Treatment Works. The water is subjected to conventional treatment methods to achieve prescribed water quality as stated in SANS 241. Hereafter drinking water is distributed to the Vyfhoek Reservoirs (supplying the area east of the Mooi River) and the Ventersdorp Road Reservoirs (supplying the area west of the Mooi River) respectively.

The Proposed Development will be supplied from the Vyfhoek Reservoirs, which consist of three circular concrete reservoirs with a combined capacity of 37.1 Mℓ (15 Mℓ, 13 Mℓ & 9.1 Mℓ). The static height difference between the Vyfhoek Road Reservoirs and the Proposed Development is approximately 70 meters.

Water Demand

Applying the typical water consumption quantities to the proposed land use (as prescribed by the *Guidelines for Human Settlements "Red Book"*), the estimated water demand for the intended land use of the proposed development is as follows:

Average Annual Daily Demand : 101 Kℓ

Instantaneous Peak Flow Rate (excluding fire flow) : 4.6 ℓ/s

Reservoir Analysis

The Proposed Development will have a negligible impact on water storage (37.1 Mℓ Vyfhoek Road Reservoirs). The estimated daily water demand of 101 Kℓ/ day, will only have a 0.3% impact on the capacity of the bulk water storage facility. Sufficient bulk storage capacity will therefore be available for the development.

New Bulk Water Connection

An existing Ø 160 mm distribution main is located south of the Proposed Development in Wynne Street. It is proposed that a new Ø 160 mm bulk supply main is constructed from the existing Ø 160 mm distribution main in Wynne Street. In addition, a new Ø 100 mm water meter connection will be needed to comply with the fire flow requirements. The complete water

meter unit will consist of two isolating valves a water meter as required by the local authority. Above ground installation of the water meter is suggested to provide easy access for maintenance and water meter readings.

A new Ø 100 mm bulk water connection is proposed, to ensure sufficient water supply and residual pressure is available to the development

Sewer:

Sewer Generation

Applying prescribed “*Red Book*” sewer flow rates, the estimated sewerage generation of the Proposed Development amounts to:

Average Daily Dry Flow : 50.5 Kℓ/d

Instantaneous Peak Wet Flow : 1.9 ℓ/s

WWTW Capacity Analysis

The hydraulic capacity of the WWTW is approximately 50 Mℓ/day. The maximum current inflow volume is recorded as 45 Mℓ/day which is 90% of the maximum design capacity during peak inflow periods. The Proposed Development will generate an estimated daily wet weather sewer volume of 58 Kℓ/d, which will take up only 0.1% of the available capacity of the plant. Sufficient capacity is therefore available for the treatment of all waste water to be generated by the Proposed Development.

New Sewer Connection

The natural topography of the site slopes towards the south eastern boundary which implies that the envisaged internal sewer network cannot be connected to the existing sewer lines on the western side of the development. As illustrated on Figure 5 hereafter, an outfall sewer line is planned for the adjacent development (Baillie Park Ext. 47).

The design of the bulk sewer outfall line of the Proposed Development is done in conjunction and planned to join to the same main outfall of the adjacent Baillie Park Ext. 54 development. The said outfall line, which connects to the existing Ø 315 mm main outfall along the irrigation canal as shown, are designed in accordance with the sewer master plan for this area. Considering the estimated expected sewer generation, the planned outfall sewer line will have sufficient capacity to accommodate the flow volumes to be generated by the Proposed Development.

Storm-water

All storm-water generated on the site currently follows the natural topography as overland flow across the stand towards the south-eastern side - dissipating into the vegetation. The Proposed Development will increase the peak storm-water runoff (1 in 2 year recurrence interval) from 89 ℓ/s to 613 ℓ/s. The concentrated storm-water runoff will have to be conveyed and discharged in an appropriate manner.

It is envisaged that the storm-water generated by the Proposed Development will be conveyed by a pipe system which is connected to the planned adjacent stormwater infrastructure. The concentrated storm-water will be discharged into natural water course south of the Proposed Development. The image hereafter indicates the storm-water flow patterns as well as the proposed storm-water conduit:

Solid Waste

Municipal Solid Waste (MSW) removal is a function of JB Marks Local Municipality. The Potchefstroom community currently generates an estimated MSW volume of 108.7 ton per day. The proposed development will increase the daily MSW volume with 0.32 ton per day an overall increase of 0.17%.

The existing solid waste disposal site of Potchefstroom has adequate capacity to accommodate additional volumes of refuse to be generated by the Proposed Development. The municipal dumping site is operated and maintained by the Waste Management Department of the Local Authority in accordance with the requirements of the Department of Water & Sanitation (DWS).

Communal refuse collection areas will be provided at the controlled access gates for the two townships (Ext. 61 & Ext. 62), adjacent to the proposed traffic circle between the two townships. The municipal waste collection trucks will therefore be able to collect the refuse from the two township externally without the need to enter the secure estates

Operation and Maintenance of Services

All external municipal services namely water, sewer, roads & storm-water, as well as refuse removal shall remain a function of the Local Authority which is responsible for the operation and maintenance thereof.

Electrical Services

The Engineer has come to the following conclusions upon consideration of the availability of bulk electrical services and the impact of the proposed development on these services:

The development falls within area historically supplied with electricity from Epsilon 66/11kV substation with limited capacity. These feeders have been moved to the newly constructed CBD 132/11kV substation creating additional capacity.

The area under consideration is supplied with two main feeders (1x150mm², 3 Core, Cu, PILC) with an available firm capacity of 5MVA (installed capacity of 10MVA). Electrical capacity will be created for the development by way of two 500kVA 11/0.42kV Miniature Substations (MSS) installed as close as possible to the electrical load centre. The two miniature substations (MSS) will form part of radial feeder at first as per the electrical bulk supply proposed network and will later be closed to form a MV ring as required.

Malva, a secondary 11kV switching substation supplied from Marl, a primary 11kV switching substation was built to create additional capacity of 5MVA (installed capacity of 10 MVA) in the area under consideration.

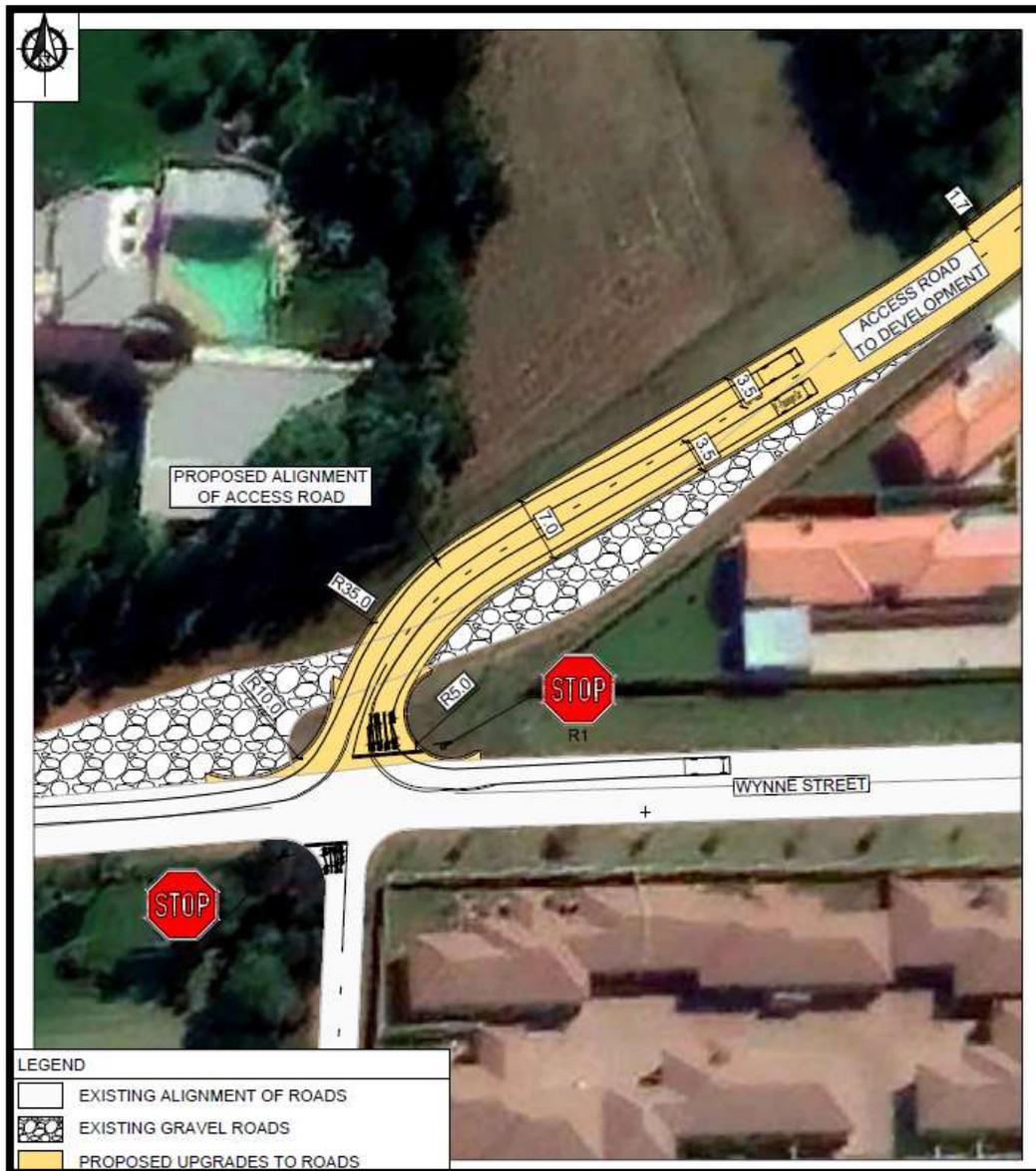
The master plan is for Malva 11kV Switching substation to supply three areas in the eastern side by way of three closed MV rings (1x95mm², 3 Core, Al, PILC), each with an available firm capacity of 1.5MVA (installed capacity of 3MVA).

As indicated by the master plan for electrical services in the areas under consideration as well as the technical analysis a new MV feeder (1x95mm², 3 Core, Al, PILC) is to be installed from Malva 11kV switching substation up to the proposed development entering from the Southern side. This new MV feeder (1x95mm², 3 Core, Al, PILC) will be closed in the future by way of continuing with the MV feeder installation to the Northern side.

Electricity will be distributed throughout the development by way of an 400V radial network consisting out of LV cable and associated distribution / metring kiosks.

Proposed Site Access

The intersection of the access road leading toward the development, and Wynne Street is proposed to be upgraded and changed into a 2-Way Stop intersection with Wynne Street having the "Right of Way". The existing concrete structure next to the current "T-Junction" intersection is to be removed.



The development is proposed to comprise two (2) Phases. Both Phases are proposed to be accessed by means of an access road running in an east / west direction within the study site boundaries, intersecting a proposed north / south through-road by means of a proposed traffic circle. This new north / south access road will be intersecting Wynne Street to the south west of the study site.

Each Phase is envisaged to have a Security Gate / Boom to the east or west of the proposed traffic circle, respectively. These accesses are both proposed to have one (1) entrance lane of 4m wide with 4.2m vertical clearance to allow for emergency vehicles such as fire trucks to enter the development in the case of an emergency. It is also proposed to have one (1) exit lane of 3m wide (minimum).

The access to Phase 1 is proposed about 40m west of the proposed traffic circle's midpoint. The access to Phase 2 is proposed at approx. 80m east of the proposed traffic circle's midpoint. Constructing each of the accesses at these proposed distances from the midpoint of the proposed traffic circle, will ensure that the required queueing / stacking space in front of each access is available on site. Please refer to Chapter 5.1 and **Drawing No. 20039/AL/01**.

The accesses must both be surfaced (dust free) and must have road markings complying with the most relevant standards of the South African Road Traffic Signs Manual (SARTSM).

There must be enough queueing distance allowed in front of any security boom or gate with a minimum of 14m proposed from the security boom to the edge of the road at the access – as per the Queueing analysis, for 1 vehicle (x6m) to queue, plus 2m for pedestrian crossing space, for Phase 1 entrance (western access) and 20m for Phase 2 entrance (eastern access).





6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?	YES	NO Please explain
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In terms of the IDP of the Municipality, under the heading Spatial Concepts (Paragraph 11.2.4.11) the following is highlighted:

“The following spatial concepts will be used to convey the intention of the Spatial Development Proposals for the urban area:
Urban built-up areas
Upgrading and proper maintenance of services
Planning and provision of bulk infrastructure for new development areas”.

7. Is this project part of a national programme to address an issue of national concern or importance?	YES	NO Please explain
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The National Development Plan was compiled by the National Planning Commission in 2011. The vision of the plan is that South Africa will write a new story where the nation’s energies are focused both on attacking poverty and expanding a robust, entrepreneurial and innovative economy. Over the next two decades and beyond, communities will need the resources and capabilities to become their own engines of development and government must support this. Government has to ensure that poor people have the environment, services and skills to improve their lives. At the same time,

government must create the conditions and environment for higher levels of public and private investment to create jobs and ensure rising incomes.

The national development plan proposes to invigorate and expand the economic opportunity through investment in infrastructure, more innovation, private investment and entrepreneurialism. The economy will absorb more labour – especially of new work seekers – and wage moderation at all levels will contribute to rising employment. Broadening these opportunities requires faster, more inclusive economic growth and higher levels of investment.

The opinion is being held that the proposed development will not be in conflict with the principles contained within the fore-mentioned National Development Plan, 2030 and will assist in moving closer to a ... “South Africa that is more inclusive, more dynamic and in which the fruits of growth are shared equitably. In 2030, the economy should be close to full employment, equip people with the skills they need, ensure that ownership of production is more diverse and able to grow rapidly, and provide the resources to pay for investment in human and physical capital.”

8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES	NO	Please explain
As indicated on the Map above, the site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. As can be seen above, the application site is situated in an area that is transitioning to a residential character. The proposed development is in line with this development trend.			
9. Is the development the best practicable environmental option for this land/site?	YES	NO	Please explain
<p>The study site is situated at the Grassland Biome which is represented by the Rand Highveld Grassland vegetation type (Mucina & Rutherford 2006). The site is located on land that has been ploughed in the past and is currently fodder crop. The development area is surrounded by already established and ongoing urban residential development and as a result the larger area has been completely altered from its original agricultural character.</p> <p>Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. No cultural heritage (archaeological and/or historical) sites, features and material resources were identified by the Specialist in the study area during his field assessment.</p>			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES	NO	Please explain
<p>The influx of people to Potchefstroom implies that the demand for housing is increasing and the site has been earmarked for residential development within the urban edge of Potchefstroom.</p> <p>Should the no-go option be implemented, this demand will not be partially addressed in Potchefstroom.</p>			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO	N/A Please explain
As indicated on the Map above, the site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. As can be seen above, the application site is situated in an area that is transitioning to a residential character. The proposed development is in line with this development trend.			

12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO	Please explain
The proposed development will lead to an increase in traffic volumes in the area.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO	Please explain
As indicated on the Map above, the site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. As can be seen above, the application site is situated in an area that is transitioning to a residential character. The proposed development is in line with this development trend.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO	Please explain
Not listed.			

15. What will the benefits be to society in general and to the local communities?	Please explain
<p>The following spatial objectives are listed in the SDF regarding residential development in the municipal area:</p> <p>Accelerate housing delivery within the context of sustainable human settlements</p> <ul style="list-style-type: none"> The proposed development aims to create viable residential stands within the urban edge of Potchefstroom. <p>Ensure that housing delivery reflect community level concerns about housing demands</p> <ul style="list-style-type: none"> Thorough public participation will be conducted in this regard. <p>Promote integration of areas and infill development</p> <ul style="list-style-type: none"> The application site will be integrated with the existing Baillie Park extensions following development and effectively uses the vacant land in the urban edge for infill planning. <p>Ensure conditions not conducive to health and safety of the inhabitants are prevented and removed</p> <ul style="list-style-type: none"> Caution was taken in the layout process to promote the health and safety of future residents. <p>Promote densification of land.</p> <ul style="list-style-type: none"> The proposed development maximises the use of available land by converting the agricultural property into viable residential units within the urban edge of the municipality. <p>Develop supporting social and economic infrastructure with all new housing projects to move away from just housing to sustainable human settlement development</p> <ul style="list-style-type: none"> The application is located in close proximity to existing social and economic infrastructure. <p>As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged and approved by the local authority.</p> <p>The proposed development will also ensure that:</p> <ul style="list-style-type: none"> The housing shortage of the area will be partially addressed. During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area. During the operational phase of the proposed development, additional employment opportunities will be created. The tax base of the Local Municipality I will be broadened. 	
16. Any other need and desirability considerations related to the proposed activity?	Please explain
Nothing that has not already been addressed.	
17. How does the project fit into the National Development Plan for 2030?	Please explain
<p>The National Development Plan was compiled by the National Planning Commission in 2011. The vision of the plan is that South Africa will write a new story where the nation's energies are focused both on attacking poverty and expanding a robust, entrepreneurial and innovative economy. Over the next two decades and beyond, communities will need the resources and capabilities to become their own engines of development and government must support this. Government has to ensure that poor people have the environment, services and skills to improve their lives. At the same time, government must create the conditions and environment for higher levels of public and private investment to create jobs and ensure rising incomes.</p>	

The national development plan proposes to invigorate and expand the economic opportunity through investment in infrastructure, more innovation, private investment and entrepreneurialism. The economy will absorb more labour – especially of new work seekers – and wage moderation at all levels will contribute to rising employment. Broadening these opportunities requires faster, more inclusive economic growth and higher levels of investment.

The opinion is being held that the proposed development will not be in conflict with the principles contained within the fore-mentioned National Development Plan, 2030 and will assist in moving closer to a ... *“South Africa that is more inclusive, more dynamic and in which the fruits of growth are shared equitably. In 2030, the economy should be close to full employment, equip people with the skills they need, ensure that ownership of production is more diverse and able to grow rapidly, and provide the resources to pay for investment in human and physical capital.”*

18. Please describe how the general objectives of Integrated Environmental Management as set out in Section 23 of NEMA as amended have been taken into account.

The IEM guidelines encourage a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels. The basic principles underpinning IEM are that there be:

informed decision-making;

- accountability for information on which decisions are taken;
- accountability for decisions taken;
- a broad meaning given to the term environment (i.e. one that includes physical, biological, social, economic, cultural, historical and political components);
- an open, participatory approach in the planning of proposals;
- consultation with interested and affected parties;
- due consideration of alternative options;
- an attempt to mitigate negative impacts and enhance positive aspects of proposals;
- an attempt to ensure that the ‘social costs’ of development proposals (those borne by society, rather than the developers) be outweighed by the ‘social benefits’ (benefits to society as a results of the actions of the developers);
- democratic regard for individual rights and obligations;
- compliance with these principles during all stages of the planning, implementation and decommissioning of the proposals (i.e. from ‘cradle to grave’); and
- the opportunity for public and specialist input in the decision-making process.

The general objectives of Integrated Environmental Management have been taken into account in this Basic Assessment report by means of identifying, predicting and evaluating the actual and potential impacts on the environment, socio-economic conditions and cultural considerations and cultural heritage component. The risks, consequences, alternatives as well as options for mitigation of activities have also been considered with a view to minimise negative impacts, enhance benefits and promote compliance within the principles of environmental management.

Additionally the Basic Assessment process will be undertaken to ensure I&APs have been afforded the opportunity to comment on the proposed activity and that their comments/inputs/concerns will be taken into consideration during the assessment process.

19. Please describe how the principles of environmental management as set out in Section 2 of NEMA as amended have been taken into account.

The principles of NEMA have been considered in this assessment through compliance with the requirements of the relevant legislation in undertaking the assessment of potential impacts, as well as through the implementation of the principle of sustainable development. In addition, the successful implementation and appropriate management of this project will ensure socio-economic upliftment.

This process will be undertaken in a transparent manner and all efforts will be made to involve interested and affected parties, stakeholders and relevant Organs of State such that an informed decision can be made by the Regulating Authority.

The study is conducted in such a way as to comply with the instructions regarding such studies and reports (as contained within the above-mentioned documents).

The following aspects have been dealt with:

SCHEDULE

Actions	Timeframe
1 Communication with authorities and source and analyse relevant baseline information and undertake site inspections	3 days
2 Compile Environmental Application Form for the project	2 days
3 Compile an <i>information requirements list</i> to be distributed to the project team. The Information required would assist with completion of the BAR.	2 days
4 Identify key interested and affected parties (I&APs)	1 day
5 Compilation of terms of reference for specialist studies	2 days
6 Commission specialist studies	1 day
7 Compile draft BAR and make available to the public for a 30 day commenting period and submit the application form to the competent authority. NB: According to the new Regulations a BAR must be submitted 90 days after the application has been submitted. The implication is that all information must be available within 80 days after submitting the Application.	3 days for compilation and 30 days for commenting period (The competent authority has 90 days to request additional information or to refuse the application, from the date of submission)
8 Prepare an Information Sheet (summary of the draft BAR) and distribute to I&APs	1 day
9 Compile and publish media notices (for the BAR) in relevant newspapers	7 – 10 days depending on the day the newspaper is published
10 Compile and place poster/s along the boundary of the site	1 day
11 Hold a public meeting / Open House / focus meeting with I&APs	1 day

12 Receive and address first round of comments from public	3 days
13 Should the draft BAR require substantial changes, these changes will be incorporated into the draft BAR and distributed	Included above (allow an additional 50 days to include #14 below)
14 Allow the identified public to provide comment within a 30 day period on above report.	3 days for compilation and 30 days for commenting period (Competent authority has an additional 50 days)
15 Address comments received on the draft BAR, Finalise BAR and update comments and response table; finalise Basic Assessment Report and submit to authorities	5 days
16 Submit final BAR to authorities for a final decision	1 day, The department has 107 days from the date of receipt to review and come to a final decision.
17 Once the decision is issued, all I&Ps must be formally informed of the decision	20 days
TOTAL AMOUNT OF DAYS:	197 days

6. NEED AND DESIRIBILITY

The Spatial vision for JB Marks Local Municipality has been formulated as follows:

“To reconstruct the urban and rural framework of JB Marks Local Municipality in order to create an integrated and sustainable city by capitalizing on its strategic location and the inherent economic potential that the area has to offer”.

The site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. The site is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

The proposed development will also promote integration of areas and infill development as the development will be integrated with the existing Baillie Park extensions following development and effectively uses the vacant land in the urban edge for infill planning and development.

In addition the above mentioned the proposed development will maximise the use of available land by converting the agricultural property into viable residential units within the urban edge.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

The proposed development will also ensure that:

- The housing shortage of the area will be partially addressed.
- During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area.
- During the operational phase of the proposed development, additional employment opportunities will be created.
- The tax base of the Local Municipality will be broadened.

7. ALTERNATIVES

One of the objectives of a BA is to investigate alternatives to the proposed project. The IEM procedure stipulates that the environmental investigation needs to consider feasible alternatives for any proposed development. Therefore, a number of possible proposals or alternatives for accomplishing the same objectives should be identified and investigated. In order to ensure that the proposed development enables sustainable development, *feasible* alternatives must be explored (S. Cliff, 2015).

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental scoping process. Alternatives should be considered as a *norm* within the Environmental Process (S. Cliff, 2015).

Alternatives have been considered in terms of EIA Regulation, 2014 Appendix 1(h). Alternatives considered includes a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative have also been included to act as a baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate have been informed by the specific circumstances of the activity and its environment.

7.1 FEASIBLE AND REASONABLE ALTERNATIVES

“*alternatives*”, in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

- (a) the property on which or location where it is proposed to undertake the activity;
- (b) the type of activity to be undertaken;
- (c) the design or layout of the activity;
- (d) the technology to be used in the activity;
- (e) the operational aspects of the activity; and
- (f) the option of not implementing the activity.

a) **Site alternatives**

List alternative sites, if applicable.

Site Alternatives	Description
Alternative Site 1 (preferred or only site alternative)	Establishment of a mixed use development (8.4232ha) with associated services on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.
Alternative Site 2	No site Alternative was investigated as this is the only site available to the applicant.

d) **Activity alternatives**

Alternatives	Description
Alternative 1 (preferred or only alternative)	Establishment of a mixed use development (8.4232ha) with associated services on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.
Activity Alternative 2	Establishment of an Industrial development (8.4232ha) with associated services on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

e) **No-go alternative**

Should this option be implemented, the “*status-quo*” will prevail and none of the advantages listed below will realize.

f) **Please motivate for preferred site, activity and technology alternative**

Alternative 1: Establishment of a mixed use development (8.4232ha) with associated services on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

The Spatial vision for JB Marks Local Municipality has been formulated as follows:

“To reconstruct the urban and rural framework of JB Marks Local Municipality in order to create an integrated and sustainable city by capitalizing on its strategic location and the inherent economic potential that the area has to offer”.

The site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. The site is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

The proposed development will also promote integration of areas and infill development as the development will be integrated with the existing Baillie Park extensions following development and effectively uses the vacant land in the urban edge for infill planning and development.

In addition the above mentioned the proposed development will maximise the use of available land by converting the agricultural property into viable residential units within the urban edge.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

The proposed development will also ensure that:

- The housing shortage of the area will be partially addressed.
- During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area.
- During the operational phase of the proposed development, additional employment opportunities will be created.

The tax base of the Local Municipality will be broadened.

Alternative 2: Establishment of an Industrial development (8.4232ha) with associated services on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

This alternative will not be acceptable as the area is located within an area that has a residential and agricultural character. The increased noise and possible emissions associated with this alternative has rendered it unfeasible and therefore it is recommended that Alternative 1 be implemented.

Alternative 3: The “no-go” option.

The no-go alternative will entail that the status quo will remain.

The influx of people to Potchefstroom implies that the demand for housing is increasing. Should the no-go option be implemented, this demand will not be partially addressed in Potchefstroom.

8. DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE PROJECT

8.1 BIO-PHYSICAL ASPECTS

8.1.1 GEOLOGY AND SOIL

According to the Geotechnical report, the area is underlain by shale. Shale is a fine-grained sedimentary rock that forms from the compaction of silt and clay-size mineral particles that we commonly call mud. This composition places shale in a category of sedimentary rocks known as mudstones. Shale is distinguished from other mudstones because it is fissile and laminated. Laminated means that the rock is made up of many thin layers. Fissile means that the rock readily splits into thin pieces along the laminations.

Development zonation for urban development according to the NHBRC was conducted, indicating the geotechnical conditions on site. The area underlain by shale was classified as a H1C1 zone representing slightly expansive (estimated total heave 7,5-15mm), slightly compressible soil (estimated total settlement 5-10mm). A competent TLB may be required during placement of services and in some areas blasting may be required

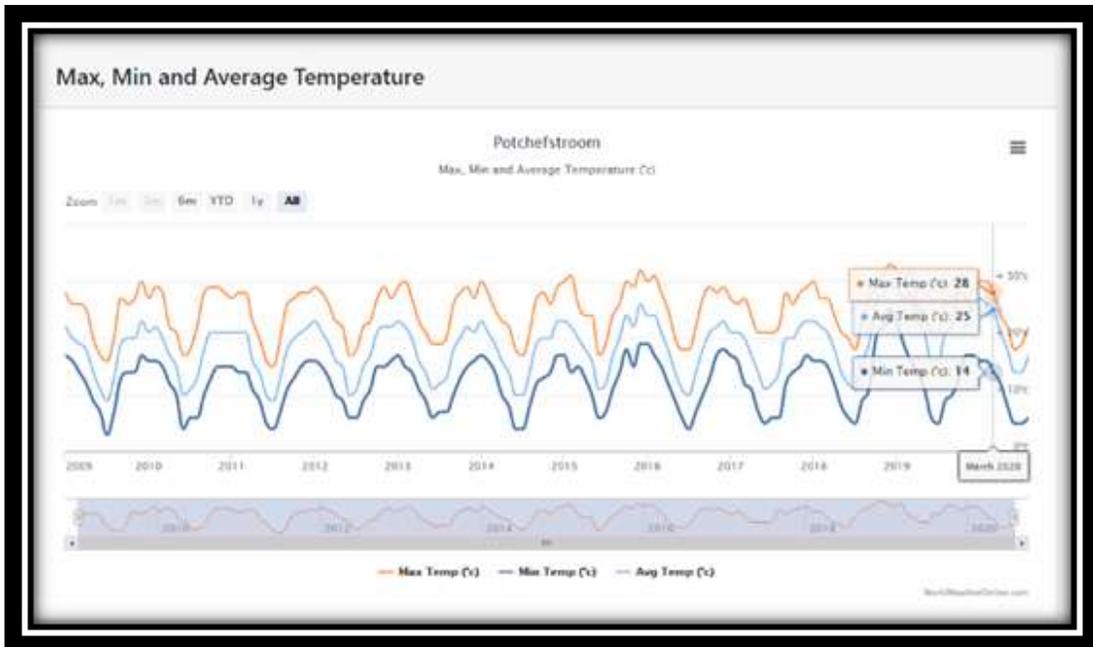
If the proposed mitigation measures as described in the Geotechnical report are adhered to, it will ensure a sustainable development as far as this variable is concerned.

8.1.2 TOPOGRAPHY

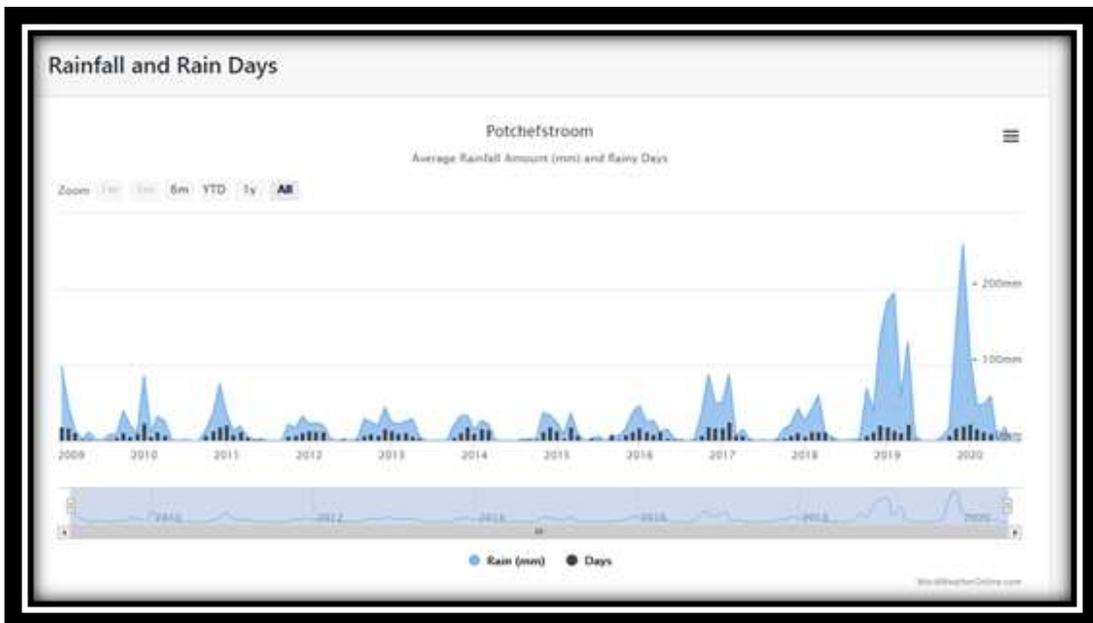
The area proposed for the development is located on a flat plain that slopes gently from the west (At an elevation of 1 344 meter above sea level) to the east (At an elevation of 1 340 meter above sea level). A detailed site survey has been carried out to establish levels. The Engineering report and the Layout plan addresses issues regarding storm water.

8.1.3 CLIMATE

The region is characterized by summer rainfall with thunderstorms. Winters are dry with frost common. The warmest months are normally December, January with February the warmest month, and the coldest months are June and July. The Table below provides climatic data for the past 10 years.



Source: <https://www.worldweatheronline.com/potchefstroom-weather-averages/north-west/za.aspx>



Source: <https://www.worldweatheronline.com/potchefstroom-weather-averages/north-west/za.aspx>

Extreme climatic events may have an influence on the project during the construction and operational phase and will have to be taken into consideration.

Climate Change

According to: WIREs Climate Change 2014, 5605-620. Doi:10.1002/wcc.295: "Climate change is a key concern within South Africa. Mean annual temperatures have increased by at least 1.5 times the observed global average of 0.65°C over the past five decades and extreme rainfall events have increased in frequency. These changes are likely to continue. Climate change

poses a significant threat to South Africa's water resources, food security, health, infrastructure, as well as its ecosystem services and biodiversity. Considering South Africa's high levels of poverty and inequality, these impacts pose critical challenges for national development. In relation to water, impact studies for the water resources sector have begun to look beyond changes in streamflow to changes in the timing of flows and the partitioning of streamflow into base flows and stormflows, reservoir yields, and extreme hydrological events. Spatially the eastern seaboard and central interior of the country are likely to experience increases in water runoff. Higher frequencies of flooding and drought events are projected for the future. Complexities of the hydrological cycle, influences of land use and management and the linkages to society, health, and the economy indicate far higher levels of complexity in the water resources sector than in other sectors. What has emerged is that land uses that currently have significant impacts on catchment water resources will place proportionally greater demands on the catchment's water resources if the climate were to become drier. The influence of climate change on water quality is an emerging research field in South Africa, with assessments limited to water temperature and non-point source nitrogen and phosphorus movement. A critical interaction that has not been explored is between changes in water quality and quantity and the combined impacts, such changes might have impact on various types of water use, e.g., irrigation, domestic consumption, or aquatic ecosystems support".

Water availability and demand has been calculated by the consulting Civil Engineers, to enable a sustainable waterborne sewage system as well as potable water supply for both the existing and future developments in the area.

8.1.4 SURFACE DRAINAGE

Plate flow is the dominant drainage pattern, with no drainage channels intersecting the site and drainage occurring in an eastern direction towards the Loop Spruit. This stream joins the Mooi River approximately 3 kilometres towards the south-west of the site.

The site is drained by surface sheet flow along natural drainage courses. The presence of ferruginised profiles indicate perennial water fluctuations. It is imperative that any proposed water channels and water features on the proposed area of development be properly sealed to prevent surface and subsurface seepage. Care must be taken to ensure adequate surface drainage to prevent accumulation of water next to structures

Erosion by sheet flow may occur in disturbed areas. Storm water drainage will have to be considered during the planning phase of the development and will have to be incorporated into the final layout plan. Storm water diversion measures such as ponding pools are recommended to control peak flows during thunderstorms.

Absence of wetlands

Wetlands such as floodplain wetlands, channelled valley-bottom wetlands, unchannelled valley-bottom wetlands, depressions, seeps and wetland flats appear to be absent at the site.

8.1.5 GROUND WATER

No groundwater was observed by the Geotechnical Engineer during the assessment in September 2019. However, the presence of oxides and hydroxides of iron and manganese was observed in the soil profiles, which is indicative of anaerobic wet soil conditions. It is possible that during extreme rainy seasons the water table might be close to the surface.

Good surface drainage should be ensured through landscaping.

Possible infiltration into the groundwater must be taken into account. During the construction phase, no spills of lubricants or construction worker sewage should be allowed to pollute the ground water. During the operational phase, sewage systems must also not pollute groundwater. These aspects are addressed in the EMP.

8.1.6 FLORA

The study site is situated at the Grassland Biome which is represented by the Rand Highveld Grassland vegetation type (Mucina & Rutherford 2006). A brief overview of the Rand Highveld vegetation type (Gm11) in which the site is located, follows:

Gm11 Rand Highveld Grassland

Distribution: In South Africa the Rand Highveld Grassland (Gm 11) is found in areas between rocky ridges in the Gauteng, North-West, Free State and Mpumalanga Provinces. Altitude 1300-1635 m, but reaches 1760 m at places (Mucina & Rutherford 2006).

Vegetation and landscape features: Highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes (Mucina & Rutherford 2006). Most common grasses on the plains belong to the genera Themeda, Eragrostis, Heteropogon and Elionurus. High diversity of herbs, many of which belong to the Asteraceae, is also a typical feature. Rocky hills and ridges carry sparse (savannoid) woodlands with *Protea caffra* subsp. *caffra*, *Protea welwitschii*, *Acacia caffra* and *Celtis africana*, accompanied by a rich suite of shrubs among which the genus *Searsia* (especially *Searsia magalismsontana*) is most prominent (Mucina & Rutherford 2006).

Important taxa of the Rand Highveld Grassland listed by Mucina & Rutherford (2006): Graminoids: *Ctenium concinnum*, *Cynodon dactylon*, *Digitaria monodactyla*, *Diheteropogon amplexans*, *Eragrostis chloromelas*, *Heteropogon contortus*, *Loudetia simplex*, *Monocymbium cerasiiforme*, *Panicum natalense*, *Schizachyrium sanguineum*, *Setaria sphacelata*, *Themeda triandra*, *Trachypogon spicatus*, *Tristachya biseriata*, *Tristachya rehmannii*, *Andropogon schirensis*, *Aristida aequiglumis*, *Aristida congesta*, *Aristida junciformis* subsp. *galpinii*, *Bewsia biflora*, *Brachiaria nigropedata*, *Brachiaria serrata*, *Bulbostylis burchellii*, *Cymbopogon caesius*, *Digitaria tricholaenoides*, *Elionurus muticus*, *Eragrostis capensis*, *Eragrostis curvula*, *Eragrostis gummiflua*, *Eragrostis plana*, *Eragrostis racemosa*, *Hyparrhenia hirta*, *Melinis nerviglumis*, *Melinis repens* subsp. *repens*, *Microchloa caffra*, *Setaria nigristrostris*, *Sporobolus pectinatus*, *Trichoneura grandiglumis*, *Urelytrum agropyroides*. Herbs: *Acanthospermum australe*, *Justicia anagalloides*, *Pollichia campestris*, *Acalypha angustata*, *Chamaecrista mimosoides*, *Dicoma anomala*, *Helichrysum caespitium*, *Helichrysum nudifolium* var. *nudifolium*, *Helichrysum rugulosum*, *Ipomoea crassipes*, *Kohautia amatymbica*, *Lactuca inermis*, *Macledium zeyheri* subsp. *zeyheri*, *Nidorella hottentotica*, *Oldenlandia herbacea*, *Rotheca hirsuta*, *Selago densiflora*, *Senecio coronatus*, *Sonchus dregeanus*, *Vernonia oligocephala*, *Xerophyta retinervis*. Geophytic Herbs: *Boophone disticha*, *Cheilanthes hirta*, *Haemanthus humilis* subsp. *humilis*, *Hypoxis rigidula* var. *pilosissima*, *Ledebouria ovatifolia*, *Oxalis corniculata*. Succulent Herb: *Aloe greatheadii* var. *davyana*. Low Shrubs: *Anthospermum rigidum* subsp. *pumilum*, *Indigofera comosa*, *Searsia magalismsontana*, *Seriphium plumosum*. Succulent Shrub: *Lopholaena coriifolia*. Geoxylic Suffrutex: *Elephantorrhiza elephantina*.

Note: Not all of the above listed plant species for the vegetation type occur at the site in the study area.



Figure 5 Indication of ecological sensitivity at the site.

<p>— Red outline</p> <p>— Light yellow outline and shading</p> <p>— Orange outline and shading</p> <p>— Green outline and shading</p>	<p>Red outline</p> <p>Light yellow outline and shading</p> <p>Orange outline and shading</p> <p>Green outline and shading</p>	<p>Boundaries of the site</p> <p>Low Sensitivity</p> <p>Medium Sensitivity</p> <p>High Sensitivity</p>
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The entire site has been cultivated in the past and consists of fodder crop. Vegetation at the site appears to be extensively degraded, modified and transformed.

It seems that the fodder crop has not been fertilized or irrigated and this has led to the establishment of alien invasive species and some natural grass species. Ecological sensitivity at the site is considered to be low.

8.1.7 FAUNA

The following paragraphs describes the threatened and near threatened fauna that are found in the North West province. As the ecological sensitivity of the site is judged to be low, it is not envisaged that any of the species listed below are present on site.

ASSESSMENT OF VERTEBRATE SPECIES OF PARTICULARLY HIGH CONSERVATION PRIORITY

Mammals of particular high conservation priority

Threatened mammal species of the North West Province. Literature sources: Friedman & Daly, (2004), Skinner & Chimimba (2005), Wilson & Reeder (2005) as quoted by Terblanche, R.F (2017). With mammal species which normally needs a large range their residential status does not implicate that they are exclusively dependent on the site or use the site as important shelter or for reproduction. No = Not recorded at site/ Unlikely to be resident at the site. Yes: Recorded at the site/ Likely to be resident at the site.

Species	Threatened Status	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Chrysospalax villosus</i> Rough-haired golden mole	Vulnerable	No	No
<i>Cloeotis percivali</i> Short-eared Trident Bat	Vulnerable/ Near-threatened	No	No
<i>Diceros bicornis</i> Black rhinoceros	Critically Endangered	No	No
<i>Lycaon pictus</i> African wild dog	Endangered	No	No
<i>Loxodonta africana</i> African elephant	Vulnerable	No	No
<i>Mystromys albicaudatus</i> White-tailed mouse	Endangered	No	No
<i>Neamblysomus julianae</i> Juliana's Golden Mole	Critically Endangered	No	No
<i>Panthera leo</i> Lion	Vulnerable	No	No
<i>Rhinolophus blasii</i> Blasi's Horseshoe Bat	Vulnerable	No	No
<i>Smutsia temminckii</i> Ground Pangolin	Vulnerable	No	No

Near threatened mammal species known to occur in the North West Province. Literature sources: Skinner & Chimimba (2005) as quoted by Terblanche, R.F (2017). No = Not recorded at site/ unlikely to be resident at the site. Yes: Recorded at the site/ Likely to be resident at the site.

Species	Threatened Status	Site is part of range	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Ceratotherium simum</i> White Rhinoceros	Near threatened	No	No	No

Data deficient (or uncertain) mammal species of the North West Province. Literature sources: Skinner & Chimimba (2005). No = Not recorded at site/ unlikely to be resident at the site. Yes: Recorded at the site/ Likely to be resident at the site.

Species	Threatened Status	Recorded at site during survey	Likely be a resident at the site
<i>Myosorex varius</i> Forest shrew	Uncertain	No	No

Birds of particular high conservation priority

Threatened bird species of the North West Province. Literature sources Barnes (2000), Hockey, Dean & Ryan, P.G. (2005) and Chittenden (2007) as quoted by Terblanche, R.F (2017). No = Not recorded at site/ Unlikely to use site as breeding area or particular habitat on which the species depends. Yes = Recorded at site/ Likely to use site as breeding area or particular habitat on which the species depends.

Species	Common name	Threatened Status	Recorded at site during survey	Likely to use site as breeding area or habitat
<i>Aegypius tracheliotos</i>	Lappet-faced Vulture	Vulnerable	No	No
<i>Anthropoides paradiseus</i>	Blue Crane	Vulnerable	No	No
<i>Aquila rapax</i>	Tawny Eagle	Vulnerable	No	No
<i>Ardeotis kori</i>	Kori Bustard	Vulnerable	No	No
<i>Balearica regulorum</i>	Grey Crowned Crane (Mahem)	Vulnerable	No	No
<i>Botaurus stellaris</i>	Eurasian Bittern	Critically Endangered	No	No
<i>Calendulauda burra</i>	Red Lark	Vulnerable	No	No
<i>Circus ranivorus</i>	African Marsh- Harrier	Vulnerable	No	No
<i>Crex crex</i>	Corn Crake	Vulnerable	No	No
<i>Eupodotis senegalensis</i>	White-bellied Korhaan	Vulnerable	No	No
<i>Falco naumanni</i>	Lesser Kestrel	Vulnerable	No	No
<i>Geronticus calvus</i>	Southern Bald Ibis	Vulnerable	No	No
<i>Gorsachius leuconotus</i>	White-backed Night-heron	Vulnerable	No	No
<i>Gypaetus barbatus</i>	Bearded Vulture	Endangered	No	No
<i>Gyps africanus</i>	White-backed Vulture	Vulnerable	No	No
<i>Gyps coprotheres</i>	Cape Vulture	Vulnerable	No	No
<i>Neophron percnopterus</i>	Egyptian Vulture	Regionally almost extinct	No	No
<i>Neotis ludwigii</i>	Ludwig's Bustard	Vulnerable	No	No
<i>Pelecanus rufescens</i>	Pink-backed Pelican	Vulnerable	No	No
<i>Polemaetus bellicosus</i>	Martial Eagle	Vulnerable	No	No

<i>Rhynchops flavirostris</i>	African Skimmer	Endangered	No	No
<i>Sagittarius serpentarius</i>	Secretarybird	Vulnerable	No	No
<i>Sarothrura ayresi</i>	White-winged Flufftail	Critically Endangered	No	No
<i>Therathopius ecaudatus</i>	Bateleur	Vulnerable (in South Africa)	No	No
<i>Tyto capensis</i>	African Grass-Owl	Vulnerable	No	No

* Though some of the above bird species that roams over large areas may occasionally be found at the site, the site does not appear to be a habitat of particular importance to these birds, and these birds also do not use the site as breeding area.

Near threatened bird species of the North West Province. Literature sources Barnes (2000), Hockey, Dean & Ryan, P.G. (2005) and Chittenden (2007) as quoted by Terblanche, R.F (2017). No = Not recorded at site/ Unlikely to be particularly dependent on the site as breeding area or habitat. Yes = Recorded at site/ Likely to be particularly dependent on the site as breeding area or habitat.

** Though some of the above bird species that roams over large areas may occasionally be found at the site, the site does not appear to be a habitat of particular importance to these birds, and these birds also do not use the site as breeding area.

Species	Common name	Threatened Status	Recorded at site during survey	Likely to use site breeding area or habitat
<i>Certhilauda chuana</i>	Short-clawed Lark	Near threatened	No	No
<i>Charadrius pallidus</i>	Chestnut-banded Plover	Near threatened	No	No
<i>Ciconia nigra</i>	Black Stork	Near threatened	No	No
<i>Circus macrourus</i>	Pallid Harrier	Near threatened	No	No
<i>Eupodotis caerulescens</i>	Blue Korhaan	Near threatened	No	No
<i>Falco biarmicus</i>	Lanner Falcon	Near threatened	No	No
<i>Falco peregrinus</i>	Peregrine Falcon	Near threatened	No	No
<i>Glareola nordmanni</i>	Black-winged Pratincole	Near threatened	No	No
<i>Leptoptilos crumeniferus</i>	Marabou Stork	Near threatened	No	No
<i>Mirafra cheniana</i>	Melodious lark	Near threatened	No	No
<i>Mycteria ibis</i>	Yellow-billed Stork	Near threatened	No	No
<i>Phoenicopterus minor</i>	Lesser Flamingo	Near threatened	No	No
<i>Phoenicopterus ruber</i>	Greater Flamingo	Near threatened	No	No
<i>Rostratula benghalensis</i>	Greater Painted-snipe	Near threatened	No	No
<i>Sterna caspia</i>	Caspian Tern	Near threatened	No	No

Reptiles of particular high conservation priority

Threatened reptile species in North West Province. Main Source: (Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers, 2014) as quoted by Terblanche, R.F (2017). No = Reptile species is not a resident on the site; Yes = Reptile species is found to be resident on the site.

Species	Threatened Status	Resident at site	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Crocodylus niloticus</i> Nile Crocodile	Vulnerable	No	No	No

Near threatened reptile species in North West Province. Main Source: Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers (2014) as quoted by Terblanche, R.F (2017). Though *Homoroselaps dorsalis* has not yet been recorded from the North West Province, its presence in some areas or the Province is anticipated. No = Reptile species is not a resident on the site; Yes = Reptile species is found to be resident on the site.

Species	Threatened Status	Resident at site	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Homoroselaps dorsalis</i> Striped Harlequin Snake	Near threatened	No	No	No

Amphibian species of particular high conservation priority

Near threatened (currently least concern) amphibian species in North West Province. No = Amphibian species is not a resident on the site; Yes = Amphibian species is found to be resident on the site.

Species	Threatened Status	Resident at site	Recorded at site during survey	Likely to be found based on habitat assessment
<i>Pyxicephalus adspersus</i> Giant Bullfrog	Near threatened (Currently Least Concern)	No	No	No

ASSESSMENT OF INVERTEBRATE SPECIES OF PARTICULAR HIGH CONSERVATION PRIORITY

Butterflies of particular conservation priority

Threatened butterfly species in North West Province, northern Northern Cape Province and Gauteng Province. Sources: Henning, Terblanche & Ball (2009), Mecenero *et al.* (2013) as quoted by Terblanche, R.F (2017). Invertebrates such as threatened butterfly species are often very habitat specific and residential status imply a unique ecosystem that is at stake.

Species	Threatened Status	Recorded at site during survey	Residential status at the site: Yes confirmed, Highly likely, Likely, Medium
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			possibility, Unlikely, Highly unlikely
<i>Aloeides dentatis dentatis</i> Roodepoort Russet	Endangered	No	Highly unlikely
<i>Chrysoritis aureus</i> Golden Opal	Endangered	No	Highly unlikely
<i>Lepidochrysops praeterita</i> Highveld Blue	Endangered	No	Highly unlikely
<i>Orachrysops mijburghi</i> Mijburgh's Blue	Endangered	No	Highly unlikely

Butterfly species of the North West Province that are not threatened and not near threatened but of which are of particular conservation concern and listed as **Critically Rare/ Rare/ Data Deficient** category (Mecenero *et al.*, 2013) as quoted by Terblanche, R.F (2017). No = Butterfly species is unlikely to be a resident at the study area; Yes = Butterfly species is a resident at the study area.

Species	Threatened Status	Recorded at site during survey	Residential status at the site: Yes confirmed, Highly likely, Likely, Medium possibility, Unlikely, Highly unlikely
<i>Colotis celimene amina</i> Lilac Tip	Rare (Low density)	No	Highly unlikely
<i>Lepidochrysops procera</i> Savanna Blue	Rare (Habitat specialist)	No	Highly unlikely
<i>Metisella meninx</i> Marsh Sylph	Rare (Habitat specialist)	No	Highly unlikely
<i>Platylesches dolomitica</i> Hilltop Hopper	Rare (low density)	No	Highly unlikely

Beetles of particular conservation priority

Fruit chafer species (Coleoptera: Scarabaeidae: Cetoniinae) in the Gauteng Province and North-West Province which are of known high conservation priority as quoted by Terblanche, R.F (2017).

Species	Threatened Status	Recorded at site during survey	Likely to be resident based on habitat assessment
<i>Ichneustoma stobbiai</i>	Uncertain	No	No
<i>Trichocephala brincki</i>	Uncertain	No	No

Scorpion species of particular conservation priority

Rock scorpion species (Scorpiones: Ischnuridae) species that are of known high conservation priority in the Gauteng Province and North-West Province as quoted by Terblanche, R.F (2017).

Species	Threatened Status	Recorded at site during survey	Likely to be resident at site based on habitat assessment
<i>Hadogenes gracilis</i>	Uncertain	No	No
<i>Hadogenes gunningi</i>	Uncertain	No	No

8.2 SOCIO ECONOMIC FACTORS

8.2.1 SOCIAL AMENITIES

The Spatial vision for JB Marks Local Municipality has been formulated as follows:

“To reconstruct the urban and rural framework of JB Marks Local Municipality in order to create an integrated and sustainable city by capitalizing on its strategic location and the inherent economic potential that the area has to offer”.

The site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. The site is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

The proposed development will also promote integration of areas and infill development as the development will be integrated with the existing Baillie Park extensions following development and effectively uses the vacant land in the urban edge for infill planning and development.

In addition the above mentioned the proposed development will maximise the use of available land by converting the agricultural property into viable residential units within the urban edge.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

During the construction phase, temporary employment will be created. The increased employment in the area during the construction phase will also result in increased expenditure, which, in addition, will mean that more than just the proposed jobs required for the construction on the site will be created due to economic spin-offs that will result.

8.2.2. AIR QUALITY

“The extent and toxicity of emissions is not necessarily a concise indicator of contributions to ground-level air pollution concentrations or of risks to health and the environment. Such contributions are also a function of the height of emission, temporal variations in the release of pollutants, and the proximity of the source to the people or the environment affected by exposure to the pollutant (such as, for instance, children, or the elderly, or people who are ill, or others who may be particularly sensitive receptors to a specific pollutant above a certain concentration). If an industry is operating close to a school or hospital or centre for the elderly, the potential exposure (in combination with the other contributing factors) is high.

The significance of vehicle emissions as contributors to air-pollutant concentrations and health risks is similarly increased by the low level (close to the ground) of the emissions, and their proximity to highly populated areas – on highways, for example, with emissions being particularly high when traffic is congested. Vehicle emissions tend to peak early in the morning and in the evenings, when the potential for atmospheric dispersion is reduced (for example, wind speeds are generally low in the early mornings and evenings, reducing their potential for dispersing pollution).

Ranking the significance of different sources of pollution on the basis of the total emissions for which each source is responsible would, for example, place industrial emissions above household fuel-burning. If the aim is to reduce impacts on human health, however, then household fuel-burning would need to be targeted as a top priority (Scorgie et al., 2004d).

Historically, air pollution control in South Africa has primarily emphasized the implementation of ‘command and control’ measures in the industrial sector. The shift from source-based control, to the management of the air that people breathe, emphasizes the importance of targeting a wider range of sources and using more flexible and varied approaches. It means paying greater attention to ambient air quality, as it is more important (and more cost-effective, in many cases) to make sure that the ambient air complies with air quality standards. This approach ensures that human and environmental health is protected and that the cumulative impact of pollution from a number of sources is addressed.

Approaches adopted or considered for future implementation have included: regulation (for example, the use of Atmospheric Emission Licences for Listed Activities); market instruments (such as atmospheric user-charges and pollution taxes); the potential for voluntary agreements, education and awareness raising; and emissions trading. International experience shows that adopting a mix of instruments and interventions is more effective than using a single instrument to improve air quality across various types of source. Although direct regulation remains important in controlling industrial sources, there is evidence that specifying emission limits is more effective than specifying the use of particular technologies, so as to give companies flexibility in selecting the method of achieving success that suits them best. This approach is advocated as being more cost-effective and more likely to stimulate technological advances in pollution control methods and production processes.

For large point sources (that is, sources of pollution that are concentrated on one site, but that have large, constant volumes of many types of pollution) that are few in number, instruments such as emissions trading have been advocated as an effective way to manage pollutant emissions and reduce the costs of compliance.

Implementing an efficient social protection system to alleviate poverty is central to maintaining conditions that facilitate not only economic growth but also environmental sustainability. Many South African households – including those with access to electricity – use coal, wood, and paraffin, due to the relative cost-effectiveness of such fuels for heating (that is, space heating) and cooking purposes.

https://www.environment.gov.za/sites/default/files/docs/stateofair_airqualityand_sustainable_development.pdf Date visited: 17/03/2020.

The proposed development is planned and will eventually be developed with the above mentioned in mind. The alleviation of poverty (Jobs that will be created) and the provision of proper accommodation facilities (Which has been designed to be as energy efficient as possible) will contribute towards lessening air pollution in the area.

In addition to the above, it should be noted that the project will however create a certain amount of dust during the construction phase. If proper dust suppression measures are implemented this variable will have very little impact (low in intensity and significance during the construction phase).

8.2.3 NOISE

It is a fact that a certain amount of noise will be generated during the construction phase of the project. Noise levels should however rarely exceed the allowable limits. It is unlikely that the project will create any more noise during the operational phase than that already experienced on site. The institutional use (crèche) may lead to additional noise in the operational phase.

8.2.4 ARCHAEOLOGY AND CULTURAL SITES

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. No cultural heritage (archaeological and/or historical) sites, features and material resources were identified in the study area during the field assessment.

No sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the assessment. The area has been utilized in the recent past for agricultural purposes (ploughing/crop growing) and as a result has been cleared and disturbed extensively over the years. During the assessment the area had been cleared of grass and other vegetation cover and visibility was therefore good on the ground as well. The study was done on foot.

Older (2005 & 2013) aerial images (Google Earth) of the study area also shows the open and flat nature of the area, and no evidence of the presence of any structures or remains. From these images it also clear that the area is being and had been used for agricultural purposes.

It should be noted that although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

Finally, from a Cultural Heritage point of view the proposed Township Development on Portion 51 of the farm Vyfhoek 428IQ should be allowed continue taking the above recommendations into consideration.

8.2.5 AESTHETICS

The area proposed for the development is located on a flat plain that slopes gently from the west towards the east at a mean elevation of 1 342 meters above sea levels. The entire site has been cultivated in the past consisting of fodder crop. Vegetation at the site appears to be extensively degraded, modified and transformed.

It seems that the fodder crop has not been fertilized or irrigated and this has led to the establishment of alien invasive species and some natural grass species. Ecological sensitivity at the site is considered to be low

Visual Intrusion is defined as the level of compatibility or congruence of the project with the particular qualities of the area, or its 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.

High visual intrusion – results in a noticeable change or is discordant with the surroundings;

Moderate visual intrusion – partially fits into the surroundings, but clearly noticeable;

Low visual intrusion – minimal change or blends in well with the surroundings.

The proposed development will change the scenic resources of the local area from an undeveloped area to a formal residential area. The visual intrusion is considered to be moderate as the proposed development will have minimal change and blends in well with the surroundings.

The proposed development will require additional lighting on and in buildings and along roads. This will change the night landscape from unlit to lit.

8.2.6 AGRICULTURAL POTENTIAL

National policy on the protection of high potential and unique agricultural land as published by Department of Agriculture in 2006 relating to subdivision of land and a change in land use, states that the protection of high potential agricultural land for food security remains the primary responsibility of the Department of Agriculture.

Draft Policy on the Preservation and Development of Agricultural Land Framework Bill published for discussion in 2014, although not finally approved, does however, indicate the Department of Agriculture's thinking on land uses, rezoning and of the protection of agricultural land.

In terms of the Draft Bill, *high potential cropping land* means land best suited to, and capable of, consistently producing acceptable levels of goods and services for a wide range of agricultural enterprises in a sustainable manner, taking into consideration expenditure of energy and economic resources. Accordingly, it includes

- Land capability classes i to iii;
- Unique agricultural land;
- Irrigated land; and
- Land suitable for irrigation (assuming water is available).

Essentially, its objective is to protect high potential land from being exploited for non-farming purposes. The definitions in the Bill states that:

- High Potential Agricultural Land means the best land available for, suited to and capable of consistently producing optimum yields of a wide range of agricultural products (food, feed, forage, fibre and oilseed), with minimum damage to the environment, and
- Unique Agricultural Land means land that is or can be used to produce specific high value crops. It is not usually of high potential but important to agriculture due to a specific combination of location, climate or soil properties that makes it highly suited for a specific crop when managed with specific farming or conservation methods. This includes land of high local importance where it is useful and environmentally sound to encourage continued agricultural production, even if some or most of the land is of mediocre quality for agriculture and is not used for particularly high value crops.

The Bill emphasises that irrigated land is automatically viewed as high potential. This then necessitates registered water rights with DWS. The amount licenced would then determine the extent of cultivation that may take place on any piece of land.

Norms and standards

The Department of Agriculture uses the following norms and standards related to applications in terms of Act 70 of 1970. A land unit, after sub-division, should:

- Be able to carry 60 large stock units per farm unit, calculated from the new long term grazing capacity map for South Africa regulated under CARA;
- In the case of dry land production, at least 100 ha of land should be available for production;
- A minimum of 20 ha of arable land with 10 ha of water rights from a recognized water source will be permitted for irrigated land.

Viable farming unit

The following should apply in order to constitute a viable farming unit:

1. Have sufficient tillable land in an area with a conducive climate that will allow for economic crop production.
2. Irrigation water must be available from a registered source. The amount is determined by the water use licence issued by the Department of Water and Sanitation (DWS).
3. The production system is for commercial farming, with the aim of producing surplus that can be sold to defray costs (not for household food security);
4. The income derived from farming should be sufficient for the farmer to cover a living wage, to fund and maintain production infrastructure and equipment, and for farming overhead costs.

In assessing the Agricultural Potential for the site, the above mentioned Legislation, guidelines and principals should be taken into account.

Farm viability

- The site is only 8.4232 ha in extent and is less than the 100 hectares required in the guidelines.
- There is no irrigated land or water use licences issued for abstraction from a registered source thereby not constituting: *“A minimum of 20 ha of arable land with 10 ha of water rights from a recognized water source will be permitted for irrigated land.”*
- The site can only carry 1 large stock unit (8 hectares per large stock unit as derived from the new long term grazing capacity map for South Africa regulated under CARA), (See Figure 6 a and b.) which is 59 less than is prescribed in the guidelines.
- The potential income derived from farming can be calculated as follows:
80 bales can be produced per hectare per year. This gives a total of 687,624 bales per annum and can be sold at R35.00 per bale. This amounts to a gross income of R24 066.00. The direct cost to produce 1 bale is R14.00. This constitutes a direct expenditure of R9 626,74, which leaves a “profit” of R14 439,26 and once again does not constitute: *“The income derived from farming should be sufficient for the farmer to cover a living wage, to fund and maintain production infrastructure and equipment, and for farming overhead costs.”*

Conclusion

From the above it is derived that the site does not constitute a viable farming unit as the projected income derived from the farm is not sufficient for the farmer to cover a living wage, to fund and maintain production infrastructure and equipment, and for farming overhead costs.

It should also be noted that the site falls within an area that has been earmarked for residential development by the Local Municipality, does not constitute *leap frogging* as it is located adjacent to existing residential developments.

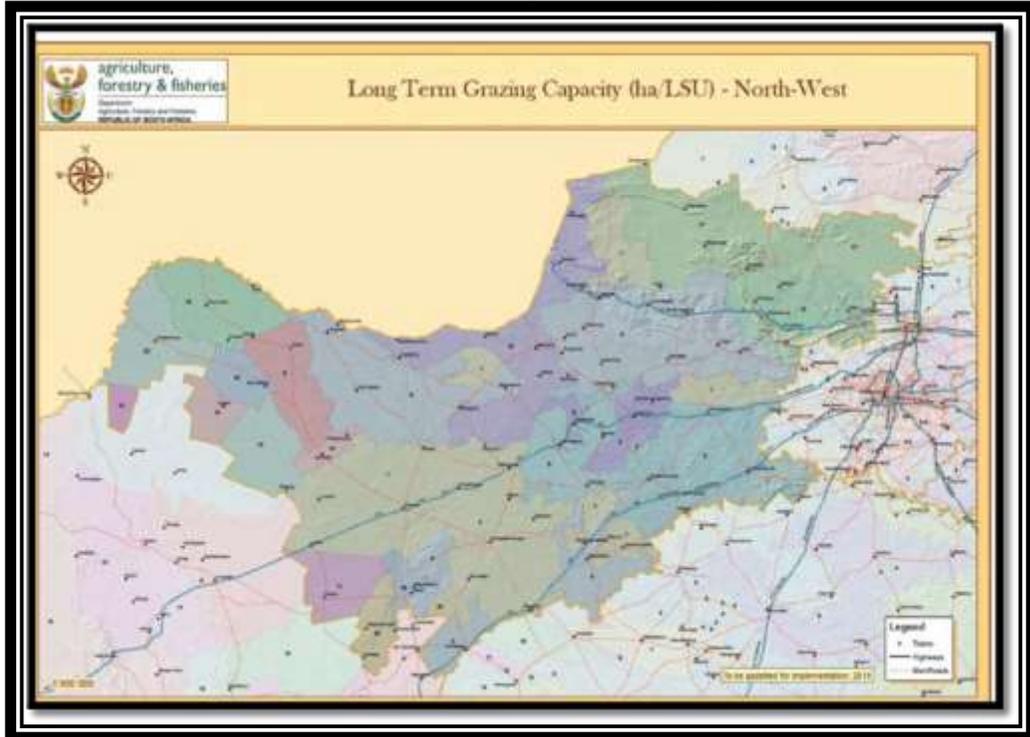


Figure 6 a: Extract from the new long term grazing capacity map for South Africa.

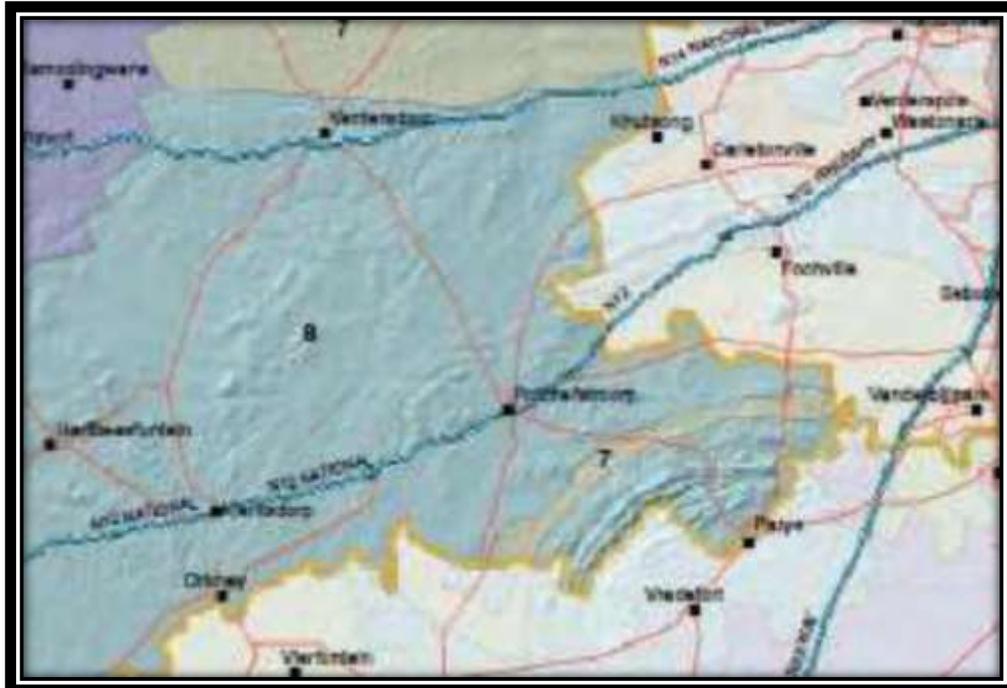


Figure 6 b: Extract from the new long term grazing capacity map for South Africa indicating that the site has a grazing potential of 8 hectares per large stock unit.

9. ENVIRONMENTAL IMPACT ASSESSMENT

It is the purpose of the prescribed impact assessment process to *inter alia* conduct an assessment of each identified potentially significant impact including cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of the impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources and the degree to which the impact can be mitigated.

The Integrated Environmental Management Information Series: Impact Significance (DEAT 2002d) states that predictions are based on simplified conceptual models of how natural processes function. Models range in complexity from those that are very intuitive to those based on explicit assumptions about environmental processes.

Criteria that can be used to describe the nature of an impact include:

- Spatial extent;
- Duration of the impact;
- Intensity or severity of impact;
- Status of the impact (i.e either positive, negative or neutral);
- Reversibility (i.e. reversible or permanent);
- Degree of certainty; and
- Mitigatory potential.

A multitude of impact prediction models exist. For purposes of the study a systematic generic and judgemental criteria model that is being illustrated below will be used. As is the case with other models, this specific model has implicit strengths and weaknesses. In the absence of standards set by law or scientific knowledge, the description of significance is largely

judgemental, subjective and variable. This may be seen as an intrinsic weakness. However, generic criteria can be used systematically to identify, predict, evaluate and determine the significance of impacts. This may be seen as an intrinsic strength.

The assessment methodology used included a desktop analysis of the site, a site visit, inputs from various specialist and identification of impacts. The identified impacts were then assessed using the impact assessment methodology as described below. These assessment methods are considered to be adequate for the basic assessment report.

Impacts were rated using the following methodology

9.1 ASSESSMENT CRITERIA

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
Duration (time scale)	Short term	Up to 5 years
	Medium term	6 – 15 years
	Long term	More than 15 years
Extent (area)	Local	Confined to study area and its immediate surroundings
	Regional	Region (cadastral, catchment, topographic)
	National	Nationally (The country)
	International	Neighboring countries and the rest of the world.
Magnitude (Intensity)	Low	Site-specific and wider natural and/or social functions and processes are negligibly altered. ((A low intensity impact will not affect the natural, cultural, or social functions of the environment).
	Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way. (Medium scale impact will alter the different functions slightly).
	High	Site-specific and wider natural and/or social functions and processes are severely altered. (A High intensity impact will influence these functions to such an extent that it will temporarily or permanently cease to exist).
Probability	Improbable	Possibility of occurrence is very low. (Such an impact will have a very slight possibility to materialise, because of design or experience).
	Possible	There is a possibility that the impact will occur
	Probable	It is most likely that the impact will occur
	Definite	The impact will definitely occur
Significance	Insignificant	Impact is negligible and will not have an influence on the decision regarding the proposed activity (No mitigation is necessary)
	Very Low	Impact is very small and should not have any meaningful influence on the decision regarding the proposed activity (No mitigation is necessary)

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
	Low	The impact may not have a meaningful influence on the decision regarding the proposed activity (No mitigation is necessary)
	Medium	The impact should influence the decision regarding the proposed activity (The project can only be carried through if certain mitigatory steps are taken)
	High	The impact will influence the decision regarding the proposed activity
	Very High	The proposed activity should only be approved under special circumstances
Reversibility	Low	There is little chance of correcting the adverse impact
	Medium	There is a moderate chance of correcting the adverse impact
	High	There is a high chance in correcting the adverse impact
Risk	Low	Assessing a risk involves an analysis of the consequences and likelihood of a hazard being realized. In decision-making, low-consequence / low-probability risks (green) are typically perceived as acceptable and therefore only require monitoring.
	Medium	Other risks (amber) may require structured risk assessment to better understand the features that contribute most to the risk. These features may be candidates for management
	High	High-consequence / high-probability risks (red) are perceived as unacceptable and a strategy is required to manage the risk.

Attributes associated with the alternatives were assessed and is outlined below:

Geographical attributes

The Geographical attributes of an area relates to the characteristics of a particular region, area or place. It influences the determination of site alternatives as it relates to the location of a site in relation to relevant features in the area.

Physical attributes

Physical attributes of an area relates to the processes and patterns in the natural environment. For the purpose of this assessment, the following processes and patterns have been investigated. Geology, soil, topography and landforms, climate and meteorology, surface water and ground water.

Biological attributes

Biological attributes for the purpose of this study includes the distribution of species and ecosystems in geographic space and through geological time. Organisms and biological communities often vary in a regular fashion along geographic gradients of latitude, elevation, isolation and habitat area. The two main branches assessed will be:

Phytogeography is the branch of biogeography that studies the distribution of plants.

Zoogeography is the branch that studies distribution of animals.

Social attributes

Social attributes is closely related to social theory in general and sociology in particular, dealing with the relation of social phenomena and its spatial components.

Economic attributes

Economic attributes includes the location, distribution and spatial organization of economic activities and also takes into account social, cultural, and institutional factors in the spatial economy of the development.

Heritage attributes

The broad generic term Cultural Heritage Resources refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of paleontological, archaeological, historical, aesthetic, scientific, architectural, religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

Cultural attributes

Cultural attributes relates to the specific characteristics such as language, religion, ethnic and racial identity, and cultural history & traditions of people. These attributes influences family life, education, economic and political structures, and, of course, business practices.

It should be noted that the above mentioned attributes do not occur in isolation and it is not uncommon for an identified impact to overlap with two or more of these attributes. Also note, not all risks require comprehensive and detailed assessment. Solid problem formulation should allow decision-makers to evaluate the extent of subsequent analysis required. The level of effort put into assessing each risk should be proportionate to its significance and priority in relation to other risks, as well as its complexity, by reference to the likely impacts. Consideration should be given to stakeholders’ perceptions of the nature of the risk.

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Establishment of a Mixed use Township (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
DIRECT IMPACTS:					
Geographical Physical Social Economic	8,5953 ha of vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Low		Low
		Reversibility	Low		Low
		Risk	Low		Low
	8.4232ha of land which has previously been used for Agricultural purposes will be transformed in order to establish a mixed use development.	Duration	Permanent	As the site is deemed to be an uneconomical farming unit, no mitigation measures are proposed for this variable.	Permanent
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Low
	Plan for the provision of services for the development.	Duration	Long term	Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Medium		Medium
Plan to rehabilitate disturbed surfaces which can lead to	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible.	Medium term	
	Extent	Local		Local	

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)

ALTERNATIVE 1: Establishment of a Mixed use Township (Preferred Alternative)

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
	erosion and dust pollution. Prepare method statements to this effect.	Magnitude (Intensity)	Low	Spray bare surfaces with water to prevent dust pollution.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the eradication of foreign and invader plant species which are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
	Risk	Low	Medium		
	Plan for the provision and maintenance of ablution facilities for construction workers to prevent pollution of surface and underground water.	Duration	Short term	Provide portable ablution facilities that will not cause pollution during the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
	Risk	Low	Medium		
	Plan to manage possible impacts that the project can have on the soil and geology.	Duration	Long term	Properly plan the construction phase in such a manner that impacts on the soil and geology of the area can be minimised. The findings of a Geotechnical Engineer must be incorporated into the design of the project. Plan to prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Long term
Extent		Local	Local		
Magnitude (Intensity)		Low	Medium		
Probability		Definite	Definite		
Significance		Medium	Medium		
Reversibility		High	High		
Risk		Low	Medium		
Plan for the removal of vegetation (which will lead to the destruction of faunal and floral habitats) during the construction phase.	Duration	Short term	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants. The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible. No snares may be set.	Short term	
	Extent	Local		Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	
	Risk	Low		Medium	
Plan to safeguard open trenches in order to alleviate the danger of collapse on people or on equipment and people- especially small children who may fall into it.	Duration	Short term	Ensure that the trenches are dug according to specifications as prescribed by the Civil Engineer. Ensure that the trenches stay open for as short a time as possible.	Short term	
	Extent	Local		Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	High		High	

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)

ALTERNATIVE 1: Establishment of a Mixed use Township (Preferred Alternative)

Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Risk	Low	Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	Medium
Indirect impacts:					
Geographical Physical Social Economic	Plan to control dust generation from the proposed project which could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction. Start the rehabilitation of disturbed surfaces as soon as possible	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan and compile method statements to implement measures for the prevention and or handling of spills of lubricants / oils that can take place on bare soil.	Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours. Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to provide method statements on the handling of waste materials such as glass, plastic, metal or paper which may present a possible pollution hazard	Extent	Local	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase. All cement is housed as to prevent spills (due to rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to ensure all involved is aware of the possible social and environmental problems that may be experienced as a result of non- compliance to the relevant legislation.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to create new employment opportunities. Plan to use local labour to ensure local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
Significance		Medium	Medium		
Reversibility		Medium	Medium		

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Establishment of a Mixed use Township (Preferred Alternative)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Risk	Low		Medium
Cumulative impacts:					
Geographical Physical Social Economic	Plan the development to ensure the social well-being of the community for which the development is intended	Extent	Local	Ensure that the development is constructed as planned. The demand for housing will be partially addressed in the area.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
	Plan to ensure that the services (Solid waste, bulk water supply water, sewage, electricity and storm water) are designed and constructed in such a manner that it will not cause Environmental degradation.	Extent	Local	Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development. Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the increase in traffic volumes that will result from the proposed development	Extent	Local	The Town and Regional Planner in conjunction with the engineer will have to design the layout of the development in such a way that accessibility will not become a problem.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Establishment of an industrial development					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
DIRECT IMPACTS:					
Geographical Physical Social Economic	8,5953 ha of vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Low		Low
		Reversibility	Low		Low
	8.4232ha of land which has previously been used for Agricultural purposes will be transformed in order to establish a mixed use development.	Duration	Permanent	As the site is deemed to be an uneconomical farming unit, no mitigation measures are proposed for this variable.	Permanent
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Establishment of an industrial development					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Risk	Low		Low
	Plan to rehabilitate disturbed surfaces which can lead to erosion and dust pollution. Prepare method statements to this effect.	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low	Spray bare surfaces with water to prevent dust pollution.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the eradication of foreign and invader plant species which are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan for the provision and maintenance of ablution facilities for construction workers to prevent pollution of surface and underground water.	Duration	Short term	Provide portable ablution facilities that will not cause pollution during the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to manage possible impacts that the project can have on the soil and geology.	Duration	Long term	Properly plan the construction phase in such a manner that impacts on the soil and geology of the area can be minimised.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium	The findings of a Geotechnical Engineer must be incorporated into the design of the project.	Medium
		Reversibility	High		High
		Risk	Low		Medium
			Plan to prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.		
	Plan for the removal of vegetation (which will lead to the destruction of faunal and floral habitats) during the construction phase.	Duration	Short term	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite	The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible.	Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan to safeguard open trenches in order to alleviate	Duration	Short term	No snares may be set.	Short term
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Establishment of an industrial development					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
	the danger of collapse on people or on equipment and people- especially small children who may fall into it.	Magnitude (Intensity)	Medium	Ensure that the trenches are dug according to specifications as prescribed by the Civil Engineer.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High	Ensure that the trenches stay open for as short a time as possible.	High
		Risk	Low		Medium
Indirect impacts:					
Geographical Physical Social Economic	Plan to control dust generation from the proposed project which could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction. Start the rehabilitation of disturbed surfaces as soon as possible	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Plan and compile method statements to implement measures for the prevention and or handling of spills of lubricants / oils that can take place on bare soil.	Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours. Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
	Risk	Low	Medium		
	Plan to provide method statements on the handling of waste materials such as glass, plastic, metal or paper which may present a possible pollution hazard	Extent	Local	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase. All cement is housed to prevent spills (due to rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
	Risk	Low	Medium		
	Plan to ensure all involved is aware of the possible social and environmental problems that may be experienced as a result of non- compliance to the relevant legislation.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
Risk		Low	Medium		
	Extent	Local		Local	

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 2: Establishment of an industrial development					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
	Plan to create new employment opportunities. Plan to use local labour to ensure local skills development will take place.	Magnitude (Intensity)	Medium	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
Cumulative impacts:					
Geographical Physical Social Economic	Plan the development to ensure the social well-being of the community for which the development is intended	Extent	Local	Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
	Risk	Low	Medium		
	Plan to ensure that the services (Solid waste, bulk water supply water, sewage, electricity and storm water) are designed and constructed in such a manner that it will not cause Environmental degradation.	Extent	Local	Appoint a Civil Engineer to assess the availability and design of services to ensure a sustainable development. Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
	Risk	Low	Medium		
	Plan for the increase in traffic volumes that will result from the proposed development	Extent	Local	The Town and Regional Planner will have to design the layout of the development in such a way that accessibility will not become a problem.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
Significance		Medium	High		
Reversibility		Low	Low		
Risk	Medium	Medium			
The industrial site may cause additional noise and air pollution in a residential and agricultural area.	Extent	Local	Rather opt for Alternative 1.	Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	High		High	
	Reversibility	Low		Low	
Risk	Low	Medium			

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 3: (No-Go Option)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
DIRECT IMPACTS:					
Geographical Physical Social Economic Cultural	No Agricultural land will be lost..	Duration	Long term	No mitigation measures required.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 3: (No-Go Option)					
Environmental Attribute	Potential impacts and risks	Assessment criteria	Assessment rating (With mitigation)	Proposed mitigation	Assessment rating (Without mitigation)
		Reversibility	Low		Low
		Risk	Medium		Medium
Indirect impacts:					
Geographical Physical Social Economic Cultural	No new employment opportunities will be created during the planning and design phase. No skills enhancement will take place If this option is implemented, the projected boost to the local and regional economy will not take place. The housing shortage of the area will not be partially addressed.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Medium		Medium
Cumulative impacts:					
Geographical Physical Social Economic Cultural	If this option is implemented, the projected boost to the local and regional economy will not take place. No new employment opportunities will be created. No improvement to local skills development will take place. No broadened Tax base for the Local Municipality.	Extent	Local	Ensure that the development is constructed and operated as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Establishment of mixed use development (Preferred Alternative)					
Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
DIRECT IMPACTS:					
Geographical Physical Social Economic	8,5953 ha of vegetation will be eradicated in order to establish the development.	Duration	Long term	Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Low		Low
		Reversibility	Low		Low
		Risk	Low	Low	
	8.4232ha of land which has previously been used for Agricultural purposes will be transformed in order to establish a mixed use development.	Duration	Permanent	As the site is deemed to be an uneconomical farming unit, no mitigation measures are proposed for this variable.	Permanent
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
Probability		Definite	Definite		
	Significance	Medium	Medium		

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)

ALTERNATIVE 1: Establishment of mixed use development (Preferred Alternative)

Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
		Reversibility	Low		Low
		Risk	Low		Low
	Un-rehabilitated, disturbed surfaces can lead to erosion and dust pollution.	Duration	Short term	Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Foreign plant species are likely to invade disturbed areas.	Duration	Short term	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Poorly planned ablation facilities for construction workers may cause pollution of surface and underground water.	Duration	Short term	Provide portable ablation facilities that will not cause pollution during the construction phase.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The proposed project can impact on the soil and geology.	Duration	Long term	The findings of a Geo-Technical Engineer must be incorporated into the design of the project. Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	The vegetation of the area will be removed during the construction phase, which will destroy floral and faunal habitats.	Duration	Short term	Start with the rehabilitation of vegetation to minimize the negative effects of the removal of plants. The rule must be to minimize the disturbance of animal life by keeping the footprint as small as possible. No snares may be set.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Open trenches can be dangerous as it can either collapse on people or on equipment and people- especially small children, can fall into it.	Duration	Short term	Ensure that the trenches are dug according to specifications as prescribed by the Civil Engineer. Ensure that the trenches stay open for as short a time as possible.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)

ALTERNATIVE 1: Establishment of mixed use development (Preferred Alternative)

Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
				Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	
<i>Indirect impacts:</i>					
Geographical Physical Social Economic	Dust generation from the proposed project could impact on the surrounding area.	Duration	Short term	Spray water on open surfaces to ensure that dust does not cause air pollution during construction. Start the rehabilitation of disturbed surfaces as soon as possible	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Spills of lubricants / oils can take place on bare soil.	Extent	Local	Prevent spills of lubricants/oils that can take place on bare soil. This will include the use of drip trays for vehicles that are standing for more than 24 hours. Ensure that all construction vehicles are in good working order and not leaking oil and or fuel. No vehicles may be serviced on site.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
	Risk	Low	Medium		
	Waste materials such as glass, plastic, metal or paper present a possible pollution hazard	Extent	Local	Implement the management plan to ensure that: All construction rubble is disposed of in a safe and environmentally acceptable manner. NO concrete, gravel or other rubbish will be allowed to remain on site after the construction phase. All cement is housed as to prevent spills (due to rain and or handling errors). NO glass, plastic, metal, or paper shall be allowed to pollute the area.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
	Risk	Low	Medium		
	Non-compliance to the relevant legislation may cause social and environmental problems.	Extent	Local	Ensure that contractors (construction phase) abide by all the requirements of the Occupational Health and Safety Act. Ensure that all contractors are aware of the consequences of non-compliance to the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High
Risk	Low	Medium			
New employment opportunities will be created. Local skills development will take place.	Extent	Local	No mitigation measures needed apart from the fact that contractors will have to ensure that they abide to the requirements of the Occupational Health and Safety Act and the Employment Equity Act.	Local	
	Magnitude (Intensity)	Medium		Medium	
	Probability	Definite		Definite	
	Significance	Medium		Medium	
	Reversibility	Medium		Medium	

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Establishment of mixed use development (Preferred Alternative)					
Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
		Risk	Low		Medium
Cumulative impacts:					
Geographical Physical Social Economic	Enhancement of the social well-being of the local communities for which the development is intended	Extent	Local	Ensure that the development is constructed as planned.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite	The demand for housing will be partially addressed in the area.	Definite
		Significance	Medium		Medium
		Reversibility	Medium		Medium
		Risk	Low		Medium
	Solid waste: The proposed development will add additional solid waste into the existing waste stream of the Local Municipality. Sewage: The proposed development will add additional sewage into the existing sewage stream. Water supply: The proposed development will add pressure to the water supply of Local Municipality's Water.	Extent	Local	Ensure that the development is constructed as planned by the Civil Engineer.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Low		Medium
	Traffic: The proposed development will result in an increase in traffic in the immediate surroundings of the proposed development.	Extent	Local	Ensure that the development is constructed as planned by the Civil engineer and Town and Regional Planner. Ensure the access road is surfaced from the junction with Wynne Street and the concrete structure is removed.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Vegetation will be removed.	Extent	Local	No mitigation measures possible.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
Significance		High	High		
Reversibility		Low	Low		
Risk		Medium	Medium		
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: Establishment of a mixed use development erven (Preferred Alternative)					
Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
DIRECT IMPACTS:					
Geographical Physical Social Economic	Poorly maintained and serviced infrastructure may cause environmental problems.	Extent	Local	It will be the responsibility of the Local Municipality to maintain the infrastructure.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)

ALTERNATIVE 1: Establishment of a mixed use development erven (Preferred Alternative)

Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute	Environmental Attribute
Cultural		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	High		High
Indirect impacts:					
Geographical Physical Social Economic Cultural	Lack of rehabilitation may cause problems	Extent	Local	It will be the responsibility of the Local Municipality to ensure that the rehabilitation plan is implemented	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium- high		High
		Reversibility	High		Medium
		Risk	High		High
Cumulative impacts:					
Geographical Physical Social Economic Cultural	Enhancement of the social well-being of the local communities for which the development is intended	Extent	Local	No mitigation measures required.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium
Geographical Physical Social Economic Cultural	Broadened tax base: The proposed development will generate more income for the Local Municipality.	Extent	Local	No mitigation measures required.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	High		High
		Risk	Medium		Medium

10. PUBLIC PARTICIPATION.

10.1 ADVERTISEMENT AND NOTICE

Publication name	Potchefstroom Herald	
Date published	16/10/2020	
Site notice 1 position	Latitude	Longitude
	26°43'20.16"S	27° 7'26.13"E
Date placed	15/10/2020	

**PROOF OF SITE NOTICE AFFIXED IN LINE WITH COVID-19 PROTOCOL: PROTECTIVE GEAR (MASK & GLOVES)
AND SANITIZATION IN PLACE: 15/10/2020 (SEE BELOW)**



KENNISGEWINGS • NOTICES

**ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
(BASIC ASSESSMENT) (NW/ELA/35/2016)**

NOTICE IS HEREBY GIVEN OF AN ENVIRONMENTAL IMPACT ASSESSMENT PROCESS TO BE CONDUCTED. THIS PROCESS WILL BE UNDERTAKEN IN TERMS OF SECTION 24(3) AND 44 MADE UNDER SECTION 24(5) OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 107 OF 1998) (AMENDED REGULATIONS PROMULGATED ON 07 APRIL 2017). THE PROPOSED PROJECT IS CLASSIFIED AS, AND WILL BE CONDUCTED - IN TERMS OF GOVERNMENT NOTICE NO. R.326 OF 2017 (GOVERNMENT NOTICE NO. R.327 LISTING NOTICE 3; ACTIVITY NO. 27) AND (GOVERNMENT NOTICE NO. R.324 LISTING NOTICE 5; ACTIVITY NO. 28(i)). THIS ADVERTISEMENT COMPLEIES WITH THE INSTRUCTIONS REGARDING SUCH NOTICES, NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 107 OF 1998 AS AMENDED) (AMENDED REGULATIONS PROMULGATED ON 17 APRIL 2017) (GOVERNMENT NOTICE NO. R.326 OF 2017) (REGULATION 41(2)(C)(d)). THE COMPETENT AUTHORITY IS THE NORTH WEST DEPARTMENT ECONOMIC DEVELOPMENT, ENVIRONMENT, CONSERVATION AND TOURISM. THE RESPONSIBLE OFFICER IS: MR. ROBERT NEMANASHI, POTCHEFSTROOM OFFICE, REACHABLE AT (TEL: 018 299 6696); E-MAIL: rnenanashi@nwpg.gov.za

PROJECT NAME:

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED ESTABLISHMENT OF A MIXED USE DEVELOPMENT (8.4232HA) WITH ASSOCIATED SERVICES ON LAND PREVIOUSLY USED FOR AGRICULTURAL PURPOSES ON PORTION 51 OF THE FARM VYFHOEK 428-IQ, POTCHEFSTROOM, NORTH WEST PROVINCE.

PROJECT DESCRIPTION:

THE PROPOSAL COMPRISE A MIXED USE DEVELOPMENT ON 8.4232HA OF LAND WHICH HAS PREVIOUSLY BEEN USED FOR AGRICULTURAL PURPOSES ON PORTION 51 OF THE FARM VYFHOEK 428-IQ, POTCHEFSTROOM, NORTH WEST PROVINCE. THE DEVELOPMENT IS PROPOSED TO COMPRISE OF: RESIDENTIAL 1: 56 ERVEN, RESIDENTIAL 2: 36 ERVEN, RESIDENTIAL 3: 1 ERF, INSTITUTIONAL: 1 (CRÉCHE), SURFACED ACCESS ROAD AND SECURED ACCESS

CLIENT:

FULLER DEVELOPMENTS (PTY) LTD

CONSULTANT AND CONTACT PERSON:

MRS. JE DU PLOOY OF AB ENVIRO CONSULT
7 LOUIS LEIPOLDT STREET, POTCHEFSTROOM,
2531, CELL: 071 202 4027, FAX: 018 293 0671, E-MAIL:
hannieduplooy@abenviro.co.za

PARTIES WISHING TO FORMALLY OBJECT TO AND / OR COMMENT ON THE PROPOSED DEVELOPMENT ARE REQUESTED TO FORWARD THEIR OBJECTIONS AND COMMENTS (WITH REASONS) TO AB ENVIRO CONSULT, NO LATER THAN 30 DAYS AFTER THE DATE OF THIS ADVERTISEMENT. A COPY OF THE DRAFT BASIC ASSESSMENT REPORT IS ALSO AVAILABLE FROM AB ENVIRO CONSULT ON REQUEST.

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KENNISGEWINGS • NOTICES

10.2. DETERMINATION OF APPROPRIATE MEASURES

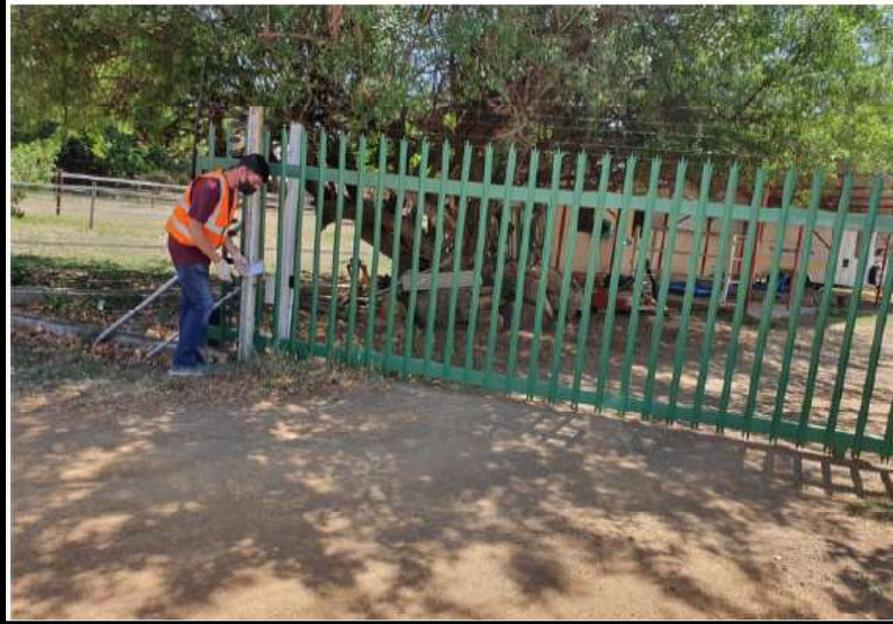
Details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN R.982.

Key stakeholders (other than organs of state) identified in terms of Regulation 40(2)(d) of GN R.982:

Title, Name and Surname	Affiliation/ key stakeholder status	Contact details (tel number or e-mail address)
N/A	Neighbours	Letter drop

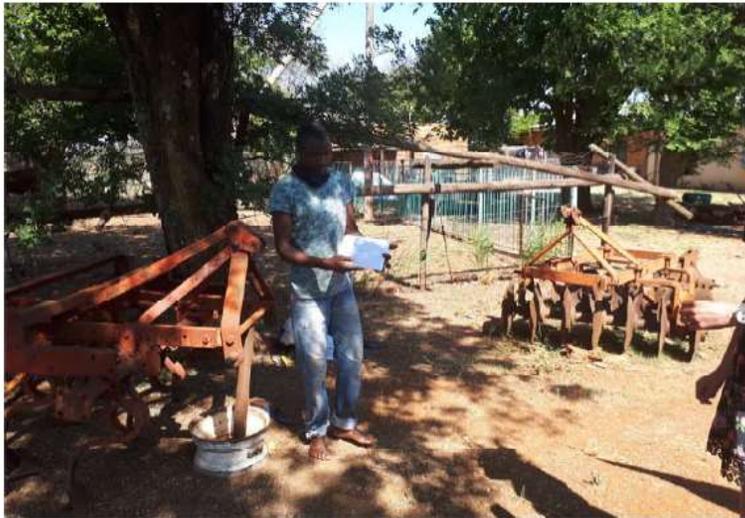
PROOF OF COVID-19 APPROVED PUBLIC PARTICIPATION PROTOCOLS AS WELL AS PROOF OF LETTER DROP:















PROOF OF ALL COVID 19 PROTECTIVE MEASURES IN PLACE (GLOVES DISPENSED IN A USED GLOVE CONTAINER) AND POST PUBLIC PARTICIPATION SANITATION:



10.3 AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders. Key stakeholders identified in terms of Regulation 7(1) and (2) and Regulation 40(2) (a)-(c) of GN R.982:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
Department of Water and Sanitation	Mr. G. Bashan	0123921300/ 012 336 8577		GovenderB@dws.gov.za	Provincial Office: Gauteng/ Vaal River Catchment Management Agency Bothongo Plaza East, Level 15 285 Francis Baard Street (Postal: Private Bag X995) PRETORIA, 0001
Head of Department: North-West Department of Agriculture and Rural Development	Dr. P. Mokaila	018-3895723	018-389 5090	pmokaila@nwpg.gov.za	Private Bag X2039 Mmabatho 2735
North West Department of Biodiversity	Head of Department	018 389 5719/ 5431/ 5688	018 392 4377		Private Bag X2039 Mmabatho 2735
Dr. Kenneth Kaunda District Municipality	The District Municipal Manager	018 473 8000	018 473 2523		Private Bag X5017 Klerksdorp 2570
JB Marks local municipality	The Municipal Manager	018 299 5111	018 297 0477		PO Box 113 Potchefstroom 2531
Ward 3 JB Marks Local municipality	The Councillor Ward 3	018 299 5111	018 297 0477		PO Box 113 Potchefstroom 2531
EMF JB Marks	N Rikhotso			ntombir@tlkwe.co.za	PO Box 113 Potchefstroom 2531
Eskom	Mr. M Dala	083 735 9327		DalaME@eskom.co.za	

PLEASE SEE PROOF BELOW

List of REGISTERED LETTERS
Lys van GEREGISTREERDE BRIEWE
(with an insurance option/met 'n versekeringsopsie)



Post Office

Full tracking and tracing/Volledige volg en spoor

Name and address of sender:
 Naam en adres van afsender: **AB ENVIRO CONSULT**
7 LOUIS LEIPOLDT STREET
POTCHEFSTROOM
2531

Enquiries/Navrae
 Sharecall
 number/nommer
0860 111 502
 www.postoffice.co.za

No	Name and address of addressee Naam en adres van geadreseerde	Insured amount Versekerde bedrag	Insurance fee Versekeringsgeld	Postage Posgeld	Service fee Diensgeld	Affix Track and Trace customer copy Plak Volg-en-Spoor-Kliëntatskrif
1	Kenneth Kaunda OM, District MM Private Bag X5017, Klerksdorp 2570					REGISTERED LETTER with a domestic insurance option ShareCall 0860 111 502 www.postoffice.co.za RC297579943ZA CUSTOMER COPY 301028R
2	JB Marks LM, The MM PO BOX 113 Potchefstroom, 2520					REGISTERED LETTER with a domestic insurance option ShareCall 0860 111 502 www.postoffice.co.za RC458600548ZA CUSTOMER COPY 301028R
3	JB Marks LM, Ward C11r 3 PO BOX 113 Potchefstroom, 2520					REGISTERED LETTER with a domestic insurance option ShareCall 0860 111 502 www.postoffice.co.za RC458600534ZA CUSTOMER COPY 301028R
4	Department of Agriculture & RD Private Bag X039, Mmabatho, 2735					REGISTERED LETTER with a domestic insurance option ShareCall 0860 111 502 www.postoffice.co.za RC458600640ZA CUSTOMER COPY 301028R
5	Department of Biodiversity Private Bag X2035, Mmabatho, 2735					REGISTERED LETTER with a domestic insurance option ShareCall 0860 111 502 www.postoffice.co.za RC458600636ZA CUSTOMER COPY 301028R
6						
7						
8						
9						
10						

Number of letters posted
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7 Louis Leipoldt Street,
Potchefstroom, 2531
Tel: + 27 (71) 202 4027
Fax: + 27 (18) 293 0671
hannie.duplooy@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

Mr C Lobakeng

Directorate: Department of Water and Sanitation

The Department of Water and Sanitation

Provincial Office: Gauteng/ Vaal River Catchment Management Agency

Bothongo Plaza East, Level 15

285 Francis Baard Street

PRETORIA, 0001

Tel. 012 392 1300

16/10/2020

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED ESTABLISHMENT OF A MIXED USE DEVELOPMENT (8.4232HA) WITH ASSOCIATED SERVICES ON LAND PREVIOUSLY USED FOR AGRICULTURAL PURPOSES ON PORTION 51 OF THE FARM VYFHOEK 428-IQ, POTCHEFSTROOM, NORTH WEST PROVINCE.

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Yours sincerely,

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PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)

MR.J.P. DE VILLIERS (M Sc,HED; EAP-EAPASA); IAIA MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA)



7 Louis Leipoldt Street,
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Fax: + 27 (18) 293 0671
hannieduplooy@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

Dr. P. Mokaila
Directorate: Department Agriculture and Rural Development
Private Bag X2039
Mmabatho
2735

16/10/2020

Dear Sir / Madam

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7 Louis Leipoldt Street,
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Fax: + 27 (18) 293 0671
hannieduplooy@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

Mr M. J. Denga
Directorate: Biodiversity Management and Conservation
Private Bag X2039
Mmabatho
2735

16/10/2020

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Fax: + 27 (18) 293 0671
hannieduplooy@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

The Municipal Manager
Dr. Kenneth Kaunda District Municipality
Private Bag X5017
Klerksdorp
2570

16/10/2020

Dear Sir / Madam

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Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Tel: + 27 (71) 202 4027
Fax: + 27 (18) 293 0671
hannieduplooy@abenviro.co.za

The Municipal Manager
JB Marks Local Municipality
PO Box 113
Potchefstroom
2520

16/10/2020

Dear Sir / Madam

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED ESTABLISHMENT OF A MIXED USE DEVELOPMENT (8.4232HA) WITH ASSOCIATED SERVICES ON LAND PREVIOUSLY USED FOR AGRICULTURAL PURPOSES ON PORTION 51 OF THE FARM VYFHOK 428-IQ, POTCHEFSTROOM, NORTH WEST PROVINCE.

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Tel: + 27 (71) 202 4027
Fax: + 27 (18) 293 0671
hannieduplooy@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

The Cllr. Ward 3
JB Marks Local Municipality
PO Box 113
Potchefstroom
2520

16/10/2020

Dear Sir / Madam

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Tel: + 27 (71) 202 4027
Fax: + 27 (18) 293 0671
hannieduplooy@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

N Rikhotso
ntombir@tlokwe.gov.za

16/10/2020

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hannieduplooy@abenviro.co.za

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

Mr M Dala
Eskom
DalaME@eskom.co.za

16/10/2020

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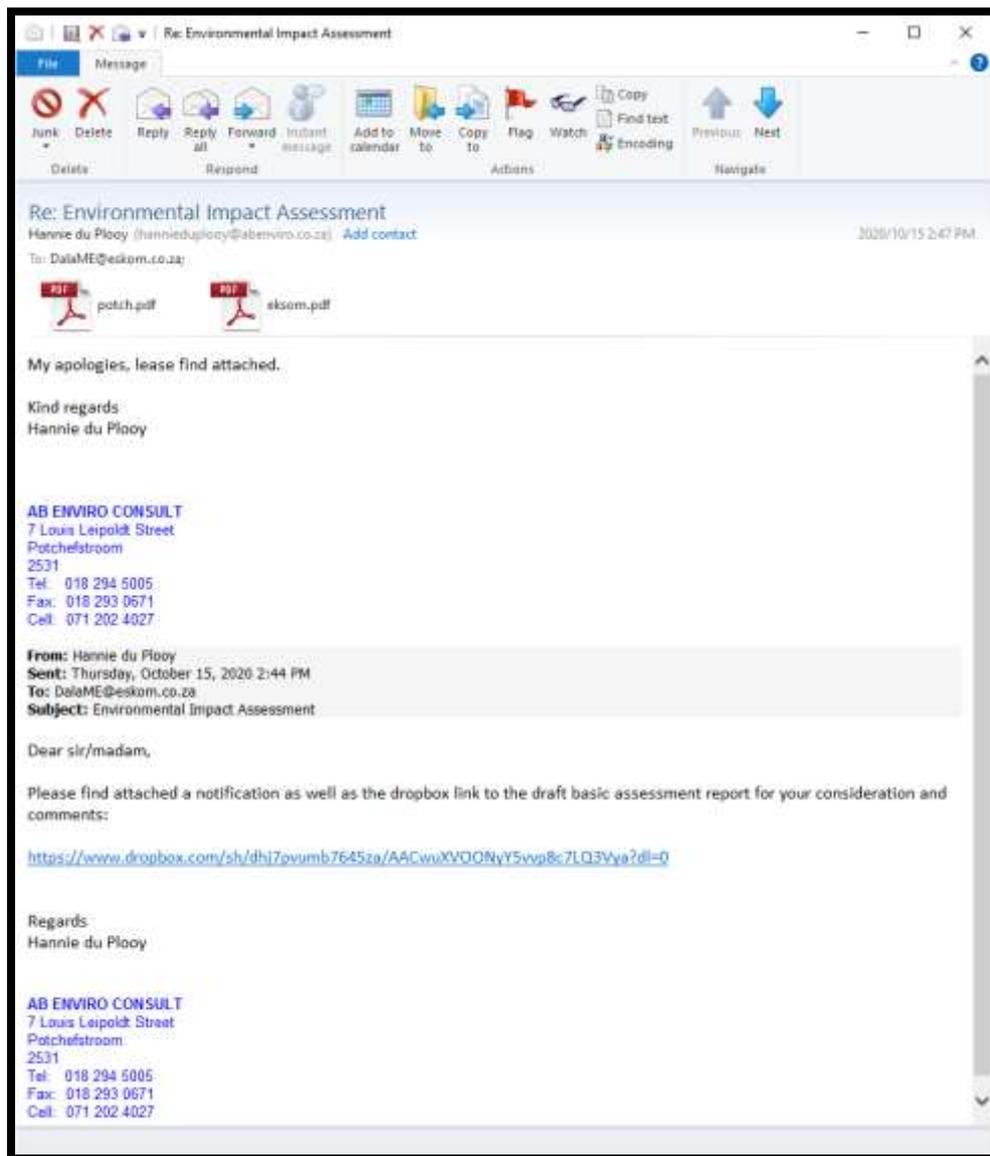
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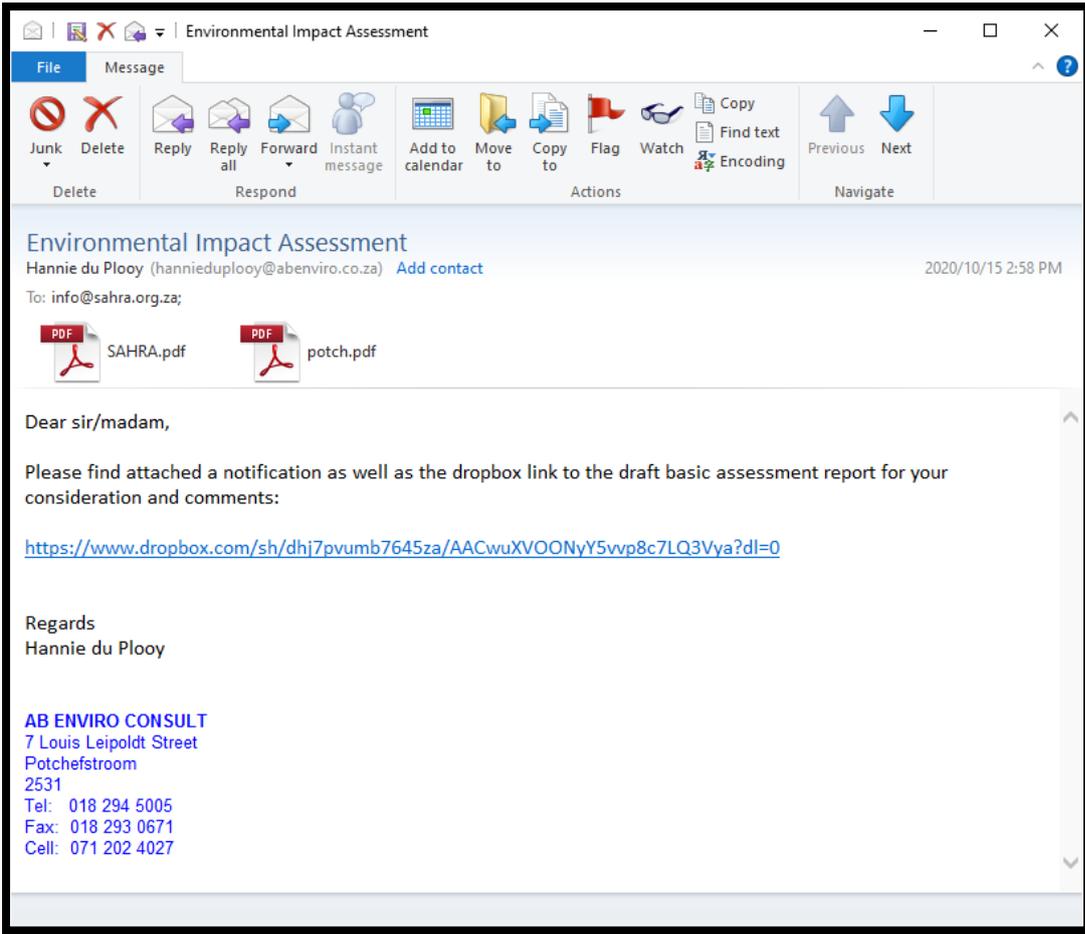
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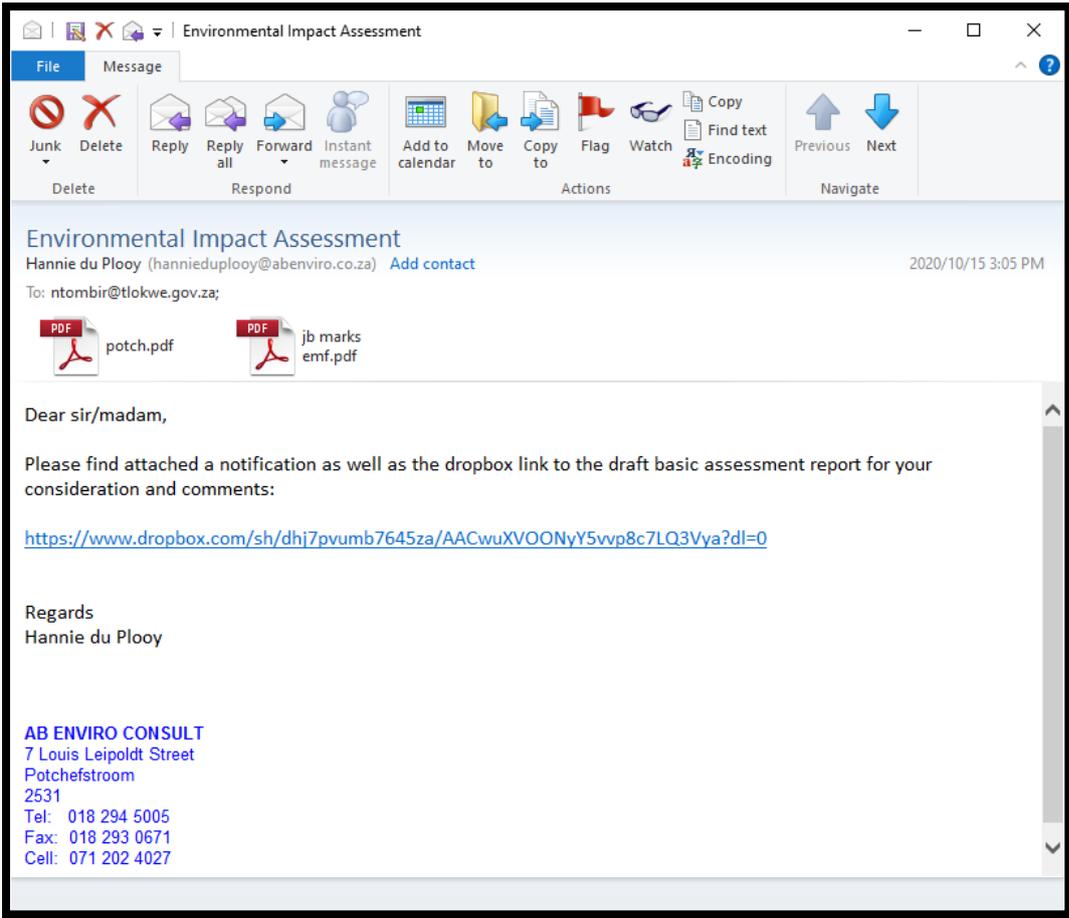
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10.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
To follow as part of the Final BAR	NA

10.5 COMMENTS AND RESPONSE REPORT

I&AP registered:	Comment received:	Response by the EAP:
To follow as part of the final BAR		

11. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS

11.1 GEO-TECHNICAL REPORT (See Appendix A for a copy of this report)

11.1.1 Terms of Reference

The purpose of this investigation was to identify any possible engineering geological problems which could have an impact on township proclamation.

Objectives

The main objectives of the investigation were seen to be:

1. Geotechnical assessment of the proposed area of development.
2. Formulate recommendations with regards to geotechnical issues relating to the construction of buildings

11.1.2 Methodology

During September 2019 the following scope of work was conducted in order to meet the objectives of the investigation:

- General reconnaissance of Portion 51 Vyfhoek Potchefstroom.
- Profile pits were made on the area of investigation.
- Augering of 75mm diameter 1,800mm deep holes (auger refusal) and characterisation of the soil horizons according to the latest version of the South African Taxonomical Soil Classification System. The soil profiles were further described according to the methods described by Jennings et. al. (1973). This method describes each horizon in terms of moisture content, colour, consistency, structure, type of soil and origin of the soil.
- Representative sampling of the profile pit for laboratory analyses according to standard methods and techniques (Table 1).

TABLE 1: STANDARD METHODS AND TECHNIQUES

- Disturbed samples were taken for laboratory analyses. The grading of the soils was determined by sieve and hydrometer analyses. Undisturbed samples were obtained for consolidation and collapse potential determinations. The mechanical properties of the soil material are described in terms of liquid limit and plasticity index (determined by means of Atterberg Limits tests) and the linear shrinkage. These values can be used to calculate the potential expansiveness of the soils, and to assess the suitability of the material for use as construction material. The consistency of a soil is described by means of its Atterberg limits, where the effect of a change in the moisture content on the consistency of a cohesive soil is measured. According to Cernica (1992) these test are useful for soil identification, classification and determination of the mechanical properties of cohesive soil material. The linear shrinkage test was conducted to determine the percentage swelling that can be expected and was performed by wetting the soil to approximately its liquid limit and drying the resultant paste in a linear shrinkage mould. The potential expansiveness of a soil depends on its clay content, the type of clay mineral, its

chemical composition and mechanical character. Material is potentially expansive if it exhibits the following properties:

- Clay content greater than 12%
- Plasticity index of more than 12%.
- Liquid limit of more than 30%.
- A linear shrinkage of more than 8%.

The potential expansiveness (low, medium, high, very high) is calculated by means of Van Der Merwe (1964), where the equivalent plasticity index versus the clay content of the material is plotted on a graph divided into heave categories. If any sample in the study area classifies as potentially expansive the amount of mobilisation on the surface will be calculated.

- Compilation and submission of report.

11.1.3 Recommendations and Conclusions

- Development zonation for urban development according to the NHBRC was conducted, indicating the geotechnical conditions on site. The area underlain by shale was classified as a H1C1 zone representing slightly expansive (estimated total heave 7,5-15mm), slightly compressible soil (estimated total settlement 5-10mm). A competent TLB may be required during placement of services and in some areas blasting may be required.
- No ground water was observed during the investigation and the presence of ferricrete in the soil profiles indicates perennial water fluctuations.
- The area of investigation was characterised by a relative smooth gradient with slopes less than 12 degrees and accessibility was not restricted by topography.
- No potential for slope instability features, i.e. land slides, mud flows, etc. was identified.
- Development should be planned to take place above the 1:100 year flood line.
- There is no erosion potential in the NHBRC zone and no potential for subsidence due to the presence of dolomite, i.e. sinkholes, undermining or backfilled soils were observed.

11.2 BULK SERVICES (See Appendix B for a copy of this report)

11.2.1 Terms of Reference

Moedi Consulting Engineers (Pty) Ltd. have been requested to investigate and report on Civil Engineering services for the proposed residential development on Portion 51, Vyfhoek, Potchefstroom to be known as Baillie Park Extensions 61 & 62, herein after referred to as the "Proposed Development".

11.1.2 Recommendations and Conclusions

Water:

Water source and bulk water infrastructure:

Potchefstroom has been reliant on the Mooi River as its sole source of raw water. Water flows from the Boskop Dam north of Potchefstroom into the Lakeside Dam (Potchefstroom Dam) via the Mooi River. The municipality abstracts a combined average of 54 Mℓ/day of raw water from the Lakeside Dam and the West Bank Canal. Raw water is treated at the 60 Mℓ/day Lakeside Treatment Works and the 13 Mℓ/day Old Treatment Works. The water is subjected to conventional treatment methods to achieve prescribed water quality as stated in SANS 241. Hereafter drinking water is distributed to the Vyfhoek Reservoirs (supplying the area east of the Mooi River) and the Ventersdorp Road Reservoirs (supplying the area west of the Mooi River) respectively.

The Proposed Development will be supplied from the Vyfhoek Reservoirs, which consist of three circular concrete reservoirs with a combined capacity of 37.1 Mℓ (15 Mℓ, 13 Mℓ & 9.1 Mℓ). The static height difference between the Vyfhoek Road Reservoirs and the Proposed Development is approximately 70 meters.

Water Demand

Applying the typical water consumption quantities to the proposed land use (as prescribed by the *Guidelines for Human Settlements "Red Book"*), the estimated water demand for the intended land use of the proposed development is as follows:

Average Annual Daily Demand : 101 Kℓ

Instantaneous Peak Flow Rate (excluding fire flow) : 4.6 ℓ/s

Reservoir Analysis

The Proposed Development will have a negligible impact on water storage (37.1 Mℓ Vyfhoek Road Reservoirs). The estimated daily water demand of 101 Kℓ/ day, will only have a 0.3% impact on the capacity of the bulk water storage facility. Sufficient bulk storage capacity will therefore be available for the development.

New Bulk Water Connection

An existing Ø 160 mm distribution main is located south of the Proposed Development in Wynne Street. It is proposed that a new Ø 160 mm bulk supply main is constructed from the existing Ø 160 mm distribution main in Wynne Street. In addition, a new Ø 100 mm water meter connection will be needed to comply with the fire flow requirements. The complete water meter unit will consist of two isolating valves a water meter as required by the local authority. Above ground installation of the water meter is suggested to provide easy access for maintenance and water meter readings.

A new Ø 100 mm bulk water connection is proposed, to ensure sufficient water supply and residual pressure is available to the development

Sewer:

Sewer Generation

Applying prescribed "*Red Book*" sewer flow rates, the estimated sewerage generation of the Proposed Development amounts to:

Average Daily Dry Flow : 50.5 Kℓ/d

Instantaneous Peak Wet Flow : 1.9 ℓ/s

WWTW Capacity Analysis

The hydraulic capacity of the WWTW is approximately 50 Mℓ/day. The maximum current inflow volume is recorded as 45 Mℓ/day which is 90% of the maximum design capacity during peak inflow periods. The Proposed Development will generate an estimated daily wet weather sewer volume of 58 Kℓ/d, which will take up only 0.1% of the available capacity of the plant. Sufficient capacity is therefore available for the treatment of all waste water to be generated by the Proposed Development.

New Sewer Connection

The natural topography of the site slopes towards the south eastern boundary which implies that the envisaged internal sewer network cannot be connected to the existing sewer lines on the western side of the development. As illustrated on Figure 5 hereafter, an outfall sewer line is planned for the adjacent development (Baillie Park Ext. 47).

The design of the bulk sewer outfall line of the Proposed Development is done in conjunction and planned to join to the same main outfall of the adjacent Baillie Park Ext. 54 development. The said outfall line, which connects to the existing Ø 315 mm main outfall along the irrigation canal as shown, are designed in accordance with the sewer master plan for this area. Considering the estimated expected sewer generation, the planned outfall sewer line will have sufficient capacity to accommodate the flow volumes to be generated by the Proposed Development.

Storm-water

All storm-water generated on the site currently follows the natural topography as overland flow across the stand towards the south-eastern side - dissipating into the vegetation. The Proposed Development will increase the peak storm-water runoff (1 in 2 year recurrence interval) from 89 l/s to 613 l/s. The concentrated storm-water runoff will have to be conveyed and discharged in an appropriate manner.

It is envisaged that the storm-water generated by the Proposed Development will be conveyed by a pipe system which is connected to the planned adjacent stormwater infrastructure. The concentrated storm-water will be discharged into natural water course south of the Proposed Development. The image hereafter indicates the storm-water flow patterns as well as the proposed storm-water conduit:

Solid Waste

Municipal Solid Waste (MSW) removal is a function of JB Marks Local Municipality. The Potchefstroom community currently generates an estimated MSW volume of 108.7 ton per day. The proposed development will increase the daily MSW volume with 0.32 ton per day an overall increase of 0.17%.

The existing solid waste disposal site of Potchefstroom has adequate capacity to accommodate additional volumes of refuse to be generated by the Proposed Development. The municipal dumping site is operated and maintained by the Waste Management Department of the Local Authority in accordance with the requirements of the Department of Water & Sanitation (DWS).

Communal refuse collection areas will be provided at the controlled access gates for the two townships (Ext. 61 & Ext. 62), adjacent to the proposed traffic circle between the two townships. The municipal waste collection trucks will therefore be able to collect the refuse from the two township externally without the need to enter the secure estates

Operation and Maintenance of Services

All external municipal services namely water, sewer, roads & storm-water, as well as refuse removal shall remain a function of the Local Authority which is responsible for the operation and maintenance thereof.

11.3 ELECTRICAL SERVICES REPORT (See Appendix C for a copy of this report)

Project Brief:

- a) A residential development is proposed in the North Eastern region of Potchefstroom area
- b) Civil and Electrical services are required for the development.
- c) Electrical services include, bulk supply, distribution of supply, area / street lighting, point of connection for stands / buildings and internal small power and lighting,
- d) The main objective at the time of this report was a services report to determine how electrical bulk supply will be established.

Design Parameters:

Electrical services will be designed towards an economic trade-off between financial constraints and optimum technology by taking the following into consideration:

- a) Statutory voltage & thermal limits;

- b) Acceptable supply availability and reliability;
- c) Financing constraints and affordability; &
- d) Acceptable aesthetics and safety.

Bulk Supply

Existing Services

The development falls within area historically supplied with electricity from Epsilon 66/11kV substation with limited capacity. These feeders have been moved to the newly constructed CBD 132/11kV substation creating additional capacity. The area under consideration is supplied with two main feeders (1x150mm², 3 Core, Cu, PILC) with an available firm capacity of 5MVA (installed capacity of 10MVA). The first feeder is achieved from the Northern side, from 235-Bailliepark, through 260-Baillie Park, up to 318-Roselt. The second feeder is achieved from the Southern side, from 103-Lupine, through 274-Parys, up to 156-Wyne.

Master Plan

Malva, a secondary 11kV switching substation supplied from Marl, a primary 11kV switching substation was built to create additional capacity of 5MVA (installed capacity of 10 MVA) in the area under consideration. The master plan is for Malva 11kV Switching substation to supply three areas in the eastern side by way of three closed MV rings (1x95mm², 3 Core, Al, PILC), each with an available firm capacity of 1.5MVA (installed capacity of 3MVA). The first MV ring has been established by cutting into the existing feeders, 400-Scorgie & 318-Roselt closing the MV ring at 156-Wyne. The proposed development falls within the second planned MV ring area, which has not been established to date.

Technical Analysis

From the technical analysis it can be concluded that the primary substation and feeders and the primary and secondary 11kV switching substation feeders under normal conditions do have capacity, however under contingency conditions the network capacity is limited. Furthermore, the existing MV ring from Malva 11kV switching substation is under pressure without taking the new and planned developments in the area under consideration. Capacity of the existing MV ring will have to be increased or a second MV ring will have to start to accommodate all planned developments as well as the proposed development.

Proposed Infrastructure

MV reticulation

Electrical capacity will be created for the development by way of two 500kVA 11/0.42kV Miniature Substations (MSS) installed as close as possible to the electrical load centre. The two miniature substations (MSS) will form part of radial feeder at first as per the electrical bulk supply proposed network and will later be closed to form a MV ring as required and shown the adjacent figure. The detail design will determine the equipment specification in order to comply with thermal, voltage drop and fault current limits.

LV reticulation

Electricity will be distributed throughout the development by way of a 400V radial network consisting out of LV cable and associated distribution / metring kiosks. Low Voltage (LV) underground (UG) cable network forming in radial network configuration as indicated in the adjacent figure. This LV reticulation network will make use of SANS approved LV cables and the type installed as per SANS approved and industry best practices. The detail design will determine the cable sizes in order to comply with thermal, voltage drop and fault current limits.

Conclusion

The development falls within area historically supplied with electricity from Epsilon 66/11kV substation with limited capacity. These feeders have been moved to the newly constructed CBD 132/11kV substation creating additional capacity.

The area under consideration is supplied with two main feeders (1x150mm², 3 Core, Cu, PILC) with an available firm capacity of 5MVA (installed capacity of 10MVA).

Malva, a secondary 11kV switching substation supplied from Marl, a primary 11kV switching substation was built to create additional capacity of 5MVA (installed capacity of 10 MVA) in the area under consideration.

The master plan is for Malva 11kV Switching substation to supply three areas in the eastern side by way of three closed MV rings (1x95mm², 3 Core, Al, PILC), each with an available firm capacity of 1.5MVA (installed capacity of 3MVA).

As indicated by the master plan for electrical services in the areas under consideration as well as the technical analysis a new MV feeder (1x95mm², 3 Core, Al, PILC) is to be installed from Malva 11kV switching substation up to the proposed development entering from the Southern side. This new MV feeder (1x95mm², 3 Core, Al, PILC) will be closed in the future by way of continuing with the MV feeder installation to the Northern side.

Bulk contribution costs that are payable to the Supply Authority for the larger network shared between developments, should be discounted against costs for the provision of bulk infrastructure by the developer.

11.4 TRAFFIC IMPACT ASSESSMENT (TIA) (See Appendix D for a copy of this report)

Introduction

The purpose of the traffic impact report is to investigate the expected peak hour traffic generated by the proposed residential development, to quantify as well as evaluate its impact on the existing road network. The development will be constructed in two phases and therefore the impact of the first phase and total development will be evaluated separately. The study also includes information about a Latent Rights Development to its north, and its impact on the surrounding road network. The study will thereafter evaluate the need for providing improvements to the existing road network which includes the key intersections, if required. As part of the study, we have also evaluated the NMT (Non-Motorised Transport) and Public Transport facilities available for the proposed residential development and the possible requirement of new facilities, if required. As can be seen in the chapters that follow, we have undertaken peak period traffic counts at the key intersections, identified according to the TMH16 and analysed the key intersections for possible capacity restraints and required upgrades. Trip generation for the proposed residential development is calculated from the trip rates and vehicle splits as set out in TMH17 Table 3.3 (of the report).

Surrounding Road Network and traffic flow:

The following roads and streets are relevant to the study area:

Parys Ave (R53): Although this road has few direct accesses from it within the study area, this road functions as a Minor Arterial (Class 3) as per the criteria of road classification in Chapter 4.5.4 of the South African Road Classification and Access Management Manual (TRH26). Near the site, this road is a surfaced single carriageway road with no median and one (1) lane in each direction. This road has a T-Junction intersection with Wynne Street as well as Erica Street with Parys Ave having "Right of Way".

Traffic counts indicate that this road carries traffic volumes of between 370vph and 450vph per direction during the Weekday morning (AM) and afternoon (PM) peak hours near Wynne Street.

Wynne Street: This road functions as a Residential Collector Street (Class U4/b) as per the criteria of road classification in Chapter 4.5.4 of the South African Road Classification and Access Management Manual (TRH26). This road is a surfaced single carriageway road with no median and one (1) lane of about 3.6m wide in each direction. This road has a T-junction intersection with Parys Ave with the latter having "Right of Way". This road also intersects, among others, with Rooibok Street by means of a T-junction and will serve as the road providing main access to the proposed development. Upgrades are proposed for Wynne Street (refer to in Chapter 8). Traffic counts indicate that this road carries traffic volumes of between 80vph and 220vph per direction during the Weekday morning (AM) and afternoon (PM) peak hours.

Erica Street: This road functions as a Residential Collector Street (Class U4/b) as per the criteria of road classification in Chapter 4.5.4 of the South African Road Classification and Access Management Manual (TRH26). This road is a surfaced single carriageway road with no median and one (1) lane in each direction. This road has a T-Junction intersection with Parys Avenue with the last-mentioned having "Right of Way". Traffic counts indicate that this road carries traffic volumes of between 90vph and 140vph per direction during the Weekday morning (AM) and afternoon (PM) peak hours.

Rooibok Street: This short road functions as an Access Road (Class 5) to various residential developments south of Wynne Street. This road is a paved single carriageway road with no median and space for two (2) vehicles next to each other travelling in each direction. This road has a T-Junction intersection with Wynne Street with the last-mentioned having Right of Way. Traffic counts indicate that this road carries traffic volumes of between 30vph and 45vph per direction during the Weekday morning (AM) and afternoon (PM) peak hours.

Future Road Network / Road Master Planning

As per the JB Marks Local Municipality Road Master Plan, prepared by V&V Consulting Engineers, attached as **Annexure C** and according to the knowledge of EDL Engineers (Pty) Ltd the following roads / streets are planned within the study area:

- Wynne Street is proposed to be lengthened to the east, intersecting a new Class 3 road just north of the existing Modderdam river / spruit, about 730m south of the study site.
- A new Class 4 road, coming from Wynne Street, running over the study site in a north / south direction, parallel to Malva Street, and 300m to its east. This new road is proposed to intersect the D1208 (Modderdam Road) to the north. The alignment of Strydom Street, a Class 4 road, is proposed to be lengthened to the east to intersect this road to the north of the study site. This road also lines-up with the planning of the north / south road reserve on Ptn 50 Vyfhoek 428-IQ, just north of our site (Ptn 51)
- A new Class 3 Road is proposed to run just north of the existing Modderdam river / spruit, about 730m south of the study site, intersecting the proposed extension of Wynne Street as well as the existing D1208 (Modderdam Road).
- It should be noted that this old Road Master Plan that is not approved by the JB Marks Local Municipality, has been used merely as a guideline by EDL Engineers (Pty) Ltd seeing as future Road Master Plans for Potchefstroom is likely to include most of the information on the plan as appended in **Annexure C of the TIA**.

Trip Generation

The expected trip generation for the proposed land use is discussed below:

Single Dwelling Units: The standard trip rate for Single Dwelling Units is 1vph / Unit, in the Weekday AM and 1vph / Unit in the Weekday PM according to Table 3.3 of the COTO TMH 17 S.A. Trip Data Manual. The directional split of 25/75 for the Weekday AM peak hour and 70/30 for the Weekday PM peak hour was applied.

Multi-level Townhouses: The standard trip rate for Multi-level Townhouses is 0.75vph / Unit, in the Weekday AM and 0.75vph / Unit in the Weekday PM according to Table 3.3 of the COTO TMH 17 S.A. Trip Data Manual. The directional split of 25/75 for the Weekday AM peak hour and 70/30 for the Weekday PM peak hour was applied.

Day-Care Centre: The standard trip rate for a Pre-School is 1vph / Unit, in the Weekday AM and 0.8vph / Unit in the Weekday PM according to Table 3.3 of the COTO TMH 17 S.A. TripData Manual. The directional split of 50/50 for the Weekday AM peak hour and 50/50 for the Weekday PM peak hour was applied.

Using the recommended parameters, it is estimated that the proposed development, will generate a total of approx. 70vph during the Weekday morning (AM) and 69vph during the Weekday afternoon (PM) peak hours after the completion of Phase 1. Using the recommended parameters, it is estimated that the proposed development, will generate an additional total of approx. 117vph during the Weekday morning (AM) and 102vph during the Weekday afternoon (PM) peak hours after the completion of Phase 2 (See TIA for summary of estimated development traffic). It can therefore be concluded that the development on Portion 51 of the Farm Vyfhoek 428- IQ will generate a total of **187vph** during the Weekday morning (AM) and **171vph** during the Weekday afternoon (PM) peak hours after both phases are completed.

Latent Rights

According to the knowledge of EDL Engineers (Pty) Ltd there is a Latent Rights Development situated on Portion 50 of the Farm Vyfhoek 428-IQ, bordering the study site on the north. This Latent Rights Development is proposed to comprise a Residential development with Residential 2 Land Use with a density of 25 units per hectare. The estimated traffic and proposed upgrades for this Latent Rights Development were considered for the purpose of this study.

Considering the size of Portion 50, a total of about 200 units can be constructed on Portion 50 of the Farm Vyfhoek 428-IQ. This amounts to a total of 171vph in the Weekday morning (AM) and 170vph in the Weekday afternoon (PM) peak hours. These trips were considered, and their impact included within the future scenario along with the proposed development in this study. Please refer to Chapter 7 as well as **Figure 9** for more information, on the latent rights of the TIA.

Proposed Site Access

The development is proposed to comprise two (2) Phases. Both Phases are proposed to be accessed by means of an access road running in an east / west direction within the study site boundaries, intersecting a proposed north / south through-road by means of a proposed traffic circle. This new north / south access road will be intersecting Wynne Street to the south west of the study site.

Each Phase is envisaged to have a Security Gate / Boom to the east or west of the proposed traffic circle, respectively. These accesses are both proposed to have one (1) entrance lane of 4m wide with 4.2m vertical clearance to allow for emergency vehicles such as fire trucks to enter the development in the case of an emergency. It is also proposed to have one (1) exit lane of 3m wide (minimum). The access to Phase 1 is proposed about 40m west of the proposed traffic circle's midpoint. The access to Phase 2 is proposed at approx. 80m east of the proposed traffic circle's midpoint. Constructing each of the accesses at these proposed distances from the midpoint of the proposed traffic circle, will ensure that the

required queueing / stacking space in front of each access is available on site. Please refer to Chapter 5.1 and **Drawing No. 20039/AL/01**.

The accesses must both be surfaced (dust free) and must have road markings complying with the most relevant standards of the South African Road Traffic Signs Manual (SARTSM). There must be enough queueing distance allowed in front of any security boom or gate with a minimum of 14m proposed from the security boom to the edge of the road at the access – as per the Queueing analysis, for 1 vehicle (x6m) to queue, plus 2m for pedestrian crossing space, for Phase 1 entrance (western access) and 20m for Phase 2 entrance (eastern access). Please refer to **Drawing 20039/AL/01** for the access layout.

Turning circles of a Passenger vehicle and typical heavy vehicles such as refuse trucks were tracked through the access and proposed traffic circle, as shown on **Drawing 20039/AL/01**, to ensure that light and heavy vehicles will be able to manoeuvre safely into and out of both phases of the development.

Sight Distance

As can be seen on **Drawing 20039/AL/01**, the access roads to both phases of the development are straight running up to the proposed traffic circle with gradients of less than 2%. Sight distance is therefore evaluated at the traffic circle, rather than the accesses. It can be concluded that, on a road with a speed limit of 40km/h and gradients of less than $\pm 3\%$, a stopping sight distance of 45m to 50m is required, which is available to both sides. It can be concluded that, regarding the proposed upgrades, accesses and traffic circle, this distance will be available for each leg of the traffic circle.

Conclusions & Recommendations

Based on the content of this traffic impact report, the following key conclusions and recommendations are relevant:

- The proposed development on Portion 51 of the Farm Vyfhoek 428-IQ, is proposed to be constructed in two phases. Phase 1 is planned to comprise 46 residential dwelling units and multi-level townhouses with a density of 60 units per hectare. Phase 2 will include 46 dwelling units and a small pre-school (70 children). Please refer to **Chapter 4.1**.
- As shown in **Figure 1**, the development is located on Portion 51 of the Farm Vyfhoek 428-IQ. The proposed development site is located just east of Grimbeek Park, situated within the borders of the J.B Marks Local Municipality.
- It is estimated that the proposed development will generate (as a worst case) a total of **187vph** during the Weekday morning (AM) and **171vph** during the Weekday afternoon (PM) peak hours after both phases are completed.
- Sidra Intersection Capacity Analyses were carried out for the Weekday morning and Afternoon peak periods at the key intersections and no upgrades are proposed for the development as a result of unacceptable levels of service.
- The intersection of the access road leading toward the development, and Wynne Street is proposed to be upgraded and changed into a 2-Way Stop intersection with Wynne Street having the "Right of Way". The existing concrete structure next to the current "T-Junction" intersection is to be removed
- The intersection of Parys Ave (R53) and Wynne Street is to be widened to allow for a separate left turning lane of 3.2m wide as vehicles approach the intersection from the east, to improve average delays and therefore also the safety of the intersection, as described in Chapter 8.
- As per the JB Marks Local Municipality Road Master Plan, prepared by V&V Consulting Engineers, attached as **Annexure C**, there are a few proposed roads within the study area, as part of the future roads master planning. Also please refer to Chapter 3.

- Each Phase is envisaged to have a Security Gate / Boom to the east or west of the proposed traffic circle, respectively. These accesses are proposed to have one (1) entrance lane of 4m wide with 4.2m vertical clearance to allow for emergency vehicles. It is also proposed to have one (1) exit lane of 3m wide (minimum), with queueing (stacking space) as discussed in Chapter 5.
- With regard to non-motorised and public transport, a minibus-taxi facility is proposed on the south eastern side of the proposed traffic circle, allowing for public transport vehicles to enter and exit the drop-off area while using the traffic circle, therefore not obstructing the flow of traffic.
- It is therefore recommended that the proposed development is supported from a traffic engineering perspective, provided that the road upgrades and the accesses are implemented as proposed in this report (and on **Drawing 20039/AL/01** and **20039/ID/01**) and to the relevant standards of the JB Marks Local Municipality.

11.5 HERITAGE IMPACT ASSESSMENT (HIA) (See Appendix E for a copy of this report)

11.3.1 TERMS OF REFERENCE

The Terms of Reference for the study was to:

1. *Identify all objects, sites, occurrences and structures of an archaeological or historical nature (cultural heritage sites) located on the portion of land that will be impacted upon by the proposed development;*
2. *Assess the significance of the cultural resources in terms of their archaeological, historical, scientific, social, religious, aesthetic and tourism value;*
3. *Describe the possible impact of the proposed development on these cultural remains, according to a standard set of conventions;*
4. *Propose suitable mitigation measures to minimize possible negative impacts on the cultural resources;*
5. *Review applicable legislative requirements*

11.3.2 METHODOLOGY

Survey of literature

A survey of available literature was undertaken in order to place the development area in an archaeological and historical context. The sources utilized in this regard are indicated in the bibliography.

Field survey

The field assessment section of the study was conducted according to generally accepted HIA practices and aimed at locating all possible objects, sites and features of heritage significance in the area of the proposed development. The location/position of all sites, features and objects is determined by means of a Global Positioning System (GPS) where possible, while detailed photographs are also taken where needed.

Oral histories

People from local communities are sometimes interviewed in order to obtain information relating to the surveyed area. It needs to be stated that this is not applicable under all circumstances. When applicable, the information is included in the text and referred to in the bibliography.

Documentation

All sites, objects, features and structures identified are documented according to a general set of minimum standards. Co-ordinates of individual localities are determined by means of the Global Positioning System (GPS). The information is added to the description in order to facilitate the identification of each locality.

11.3.3 CONCLUSIONS AND RECOMMENDATIONS

In conclusion it is possible to say that the Phase 1 HIA for the proposed Township Development on Portion 51 of the farm Vyfhoek 428IQ was conducted successfully. The development site and study area is located in Potchefstroom, Northwest Province.

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. No cultural heritage (archaeological and/or historical) sites, features and material resources were identified in the study area during the field assessment.

No sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the assessment. The area has been utilized in the recent past for agricultural purposes (ploughing/crop growing) and as a result has been cleared and disturbed extensively over the years. During the assessment the area had been cleared of grass and other vegetation cover and visibility was therefore good on the ground as well. The study was done on foot.

Older (2005 & 2013) aerial images (Google Earth) of the study area also shows the open and flat nature of the area, and no evidence of the presence of any structures or remains. From these images it also clear that the area is being and had been used for agricultural purposes.

It should be noted that although all efforts are made to locate, identify and record all possible cultural heritage sites and features (including archaeological remains) there is always a possibility that some might have been missed as a result of grass cover and other factors. The subterranean nature of these resources (including low stone-packed or unmarked graves) should also be taken into consideration. Should any previously unknown or invisible sites, features or material be uncovered during any development actions then an expert should be contacted to investigate and provide recommendations on the way forward.

Finally, from a Cultural Heritage point of view the proposed Township Development on Portion 51 of the farm Vyfhoek 428IQ should be allowed continue taking the above recommendations into consideration.

12. CONCLUSIONS AND RECOMMENDATIONS

Fuller Developments Pty Ltd has appointed **AB Enviro Consult CC**, an independent environmental consultancy, to undertake an Environmental Impact Assessment for the proposed establishment of a mixed use development (8.4232ha) with associated services on land previously used for Agricultural purposes on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

This Chapter of the BAR provides a summary of the findings of the impact assessment process, including the EAP's opinion as to whether the activity should or should not be authorised.

12.1 ENVIRONMENTAL IMPACT STATEMENT

The detailed environmental assessment for the proposed development, has not found any environmental impacts that *cannot* be mitigated to acceptable and manageable levels.

The proposed development falls within the JB Marks Local Municipality's area of jurisdiction and the Dr Kenneth Kaunda District Municipality. The site is located on the south-eastern outskirts of Potchefstroom just north of the eastern end of Wynne Street in Baillie Park and is approximately 1343m above sea level. Plate flow is the dominant drainage pattern, with no drainage channels intersecting the site with drainage occurring in an eastern direction.

The site is located on land that has been ploughed in the past and consists of fodder crop. The development area is surrounded by already established and ongoing urban residential development and as a result the larger area has been completely altered from its original agricultural character. The site does not constitute a viable farming unit as the projected income derived from the farm is not sufficient for the farmer to cover a living wage, to fund and maintain production infrastructure and equipment, and for farming overhead costs.

It should also be noted that the site falls within an area that has been earmarked for residential development by the Local Municipality, does not constitute *leap frogging* as it is located adjacent to existing residential developments

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. No cultural heritage (archaeological and/or historical) sites, features and material resources were identified by the Specialist during his field assessment.

The identification, description, evaluation and comparison of alternatives are important for ensuring a sound environmental impact assessment process.

Alternative 1: Establishment of a mixed use development (8.4232ha) with associated services on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

The Spatial vision for JB Marks Local Municipality has been formulated as follows:

"To reconstruct the urban and rural framework of JB Marks Local Municipality in order to create an integrated and sustainable city by capitalizing on its strategic location and the inherent economic potential that the area has to offer".

The site is located within the Urban Edge of the Municipality and located within an area that has been earmarked for Residential development. The site is situated in an area that is transitioning to a residential character. The proposed development will attribute to accelerate housing delivery within the context of sustainable human settlements as it aims to create viable residential stands within the urban edge of Potchefstroom.

The proposed development will also promote integration of areas and infill development as the development will be integrated with the existing Baillie Park extensions following development and effectively uses the vacant land in the urban edge for infill planning and development.

In addition the above mentioned the proposed development will maximise the use of available land by converting the agricultural property into viable residential units within the urban edge.

As such, it is clear that the proposed development is aligned with the guiding principles and spatial vision of the SDF and that the application should be encouraged.

The proposed development will also ensure that:

- The housing shortage of the area will be partially addressed.
- During the construction phase of the proposed development, employment opportunities will be created and thus decrease the unemployment rate of the area.
- During the operational phase of the proposed development, additional employment opportunities will be created.
- The tax base of the Local Municipality will be broadened.

Alternative 2: Establishment of an Industrial development (8.4232ha) with associated services on Portion 51 of the Farm Vyfhoek 428-IQ, Potchefstroom, North West Province.

This alternative will not be acceptable as the area is located within an area that has a residential and agricultural character. The increased noise and possible emissions associated with this alternative has rendered it unfeasible and therefore it is recommended that Alternative 1 be implemented.

Alternative 3: The “no-go” option.

The no-go alternative will entail that the status quo will remain.

The influx of people to Potchefstroom implies that the demand for housing is increasing. Should the no-go option be implemented, this demand will not be partially addressed in Potchefstroom

It is therefore proposed that Alternative 1 be the preferred alternative.

Specialist studies were conducted and a full Public Participation Process was followed. This information was used to generate a sensitivity map that was used to assess the sustainability of the design and layout plan for the proposed development.

The **Geo-Technical Engineer** has stated that the development zonation for urban development according to the NHBRC was conducted, indicating the geotechnical conditions on site. The area underlain by shale was classified as a H1C1 zone representing slightly expansive (estimated total heave 7,5-15mm), slightly compressible soil (estimated total settlement 5-10mm). A competent TLB may be required during placement of services and in some areas blasting may be required.

The **Civil Engineer** noted that Bulk Services is available in the area and will connect to Municipal infrastructure.

The **Electrical Engineer** taking account of the master plan for electrical services in the areas under consideration as well as the technical analysis a new MV feeder (1x95mm², 3 Core, Al, PILC) is to be installed from Malva 11kV switching substation up to the proposed development entering from the

Southern side. This new MV feeder (1x95mm², 3 Core, AI, PILC) will be closed in the future by way of continuing with the MV feeder installation to the Northern side.

The **Traffic Engineer** has recommended the Access road to the site be surfaced for the whole length and the existing concrete structure next to the current “T-junction” intersection be removed and road markings and signage erected. The accesses to both phases are deemed acceptable.

The **Heritage Impact Assessment** revealed no sites, features or material of cultural heritage (archaeological and/or historical) origin or significance in the study area. The area has been utilized in the recent past for agricultural purposes (ploughing/crop growing) and as a result has been cleared and disturbed extensively over the years.

A full Public Participation Process is being conducted and all objections or comments will be included into the Final BAR.

12.2 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

EMPR's aim to identify and minimise the potential impacts that the proposed construction and operational phases of the project may have on the receiving environment. An EMPR has been developed which is contained in Appendix E and includes detailed mitigatory measures for the construction phase.

As a general guideline, the EMPR should be based on a comprehensive set of environmental aspects (elements of the facility that can interact with the environment), and hence, the EMPR compiled for this application includes the following key components:

- Mechanisms for the on-going identification and assessment of environmental aspects and impacts;
- Environmental management programmes; objectives and targets;
- Environmental monitoring and reporting framework;
- Environmental management procedures; and,
- Mechanisms for the recording of environmental incidents and implementing corrective and preventative actions.

12.3 EAP OPINION

The information contained in this BAR and Specialist Studies, provides a detailed and comprehensive description of the proposed project, baseline environment and potential environmental impacts associated with the proposed development. As no significant impacts that cannot be mitigated were identified, AB Enviro Consult is of the opinion that the project should proceed, provided that the necessary mitigation and management measures are implemented.

Under South African environmental legislation, the Applicant is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. The Applicant therefore has overall and total environmental responsibility to ensure that the implementation of the construction phase of the EMPR complies with the relevant legislation and the conditions of the environmental authorisation. The applicant will thus be responsible for the implementation of the EMPR.

The environmental management programme (EMPR) should form part of the contract between the construction company and the applicant. This will help ensure that the EMPR is adhered to. It is

suggested that a suitably qualified Environmental Control Officer (ECO) be appointed for the construction phase.

12.4 CONDITIONS RECOMMENDED TO BE INCLUDED IN ANY AUTHORISATION THAT MAY BE GRANTED BY THE COMPETENT AUTHORITY IN RESPECT OF THE APPLICATION

1. The mitigation measures as described in this report must be implemented
2. The mitigation measures contained in this report are legally binding
3. Mitigation measures must be made known to personnel, contractors and sub-contractors associated with this project
4. Erosion control measures as specified in the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) must be controlled as specified in the act.
5. In the event that protected trees cannot be avoided, the developer must apply for a Forest Act License.
6. Bulk services will have to be planned for and the relevant authorizations must be obtained for the installation thereof. Occupation of the site will not be allowed if sufficient Bulk Services is not available.
7. If during the construction phase any artefacts are discovered, the work in the direct vicinity of the find must be stopped. Under no circumstances shall any artefacts be destroyed. Such a site must be demarcated and fenced off and SAHRA notified within 48 hours
8. Weeds and invader plants that are declared in terms of the Conservation of Agricultural Resource Act (Act 43 of 1983) must be controlled as prescribed in the act
9. An environmental control officer must ensure that conditions stipulated in the Environmental Authorization are complied with. The name and contact details must be supplied to The Department of Environmental Affairs - prior to the commencement of the activities
10. The contractor/s responsible for the construction must leave the site free from erosion, pollution and/or unwanted material. The affected areas must be rehabilitated to the satisfaction of the department
11. As far as possible, employment opportunities should be given to the local labour force in order to stimulate growth in the local and regional economy
12. In the event of non-compliance to any of the conditions contained in the EA, the contractor / applicant will be held responsible
13. The applicant is responsible for all costs necessary to comply with the above conditions unless otherwise specified in the contracts of the contractor/s
14. The operational maintenance plan will form part of an approved maintenance plan as described in the Act

13. AFFIRMATION BY EAP

Mrs. JE du Plooy

declare under oath that I:

- a. act as the independent environmental practitioner in this application ;
- b. do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed;
- c. do not have and will not have a vested interest in the proposed activity proceeding;
- d. have no, and will not engage in, conflicting interests in the undertaking of the activity;
- e. undertake to disclose, to the competent authority, any material information that has or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required;
- f. will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- g. will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- h. will keep a register of all interested and affected parties that participated in a public participation process; and
- i. will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.

Signature of the Environmental Assessment Practitioner:

Name of company: AB Enviro Consult CC

Date:

Signature of the Commissioner of Oaths:

Date

Designation

Official stamp:

14. LIST OF REFERENCES

Department of Environmental Affairs and Tourism. 1992. Integrated Environmental Management. Pretoria, DEAT.

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S. Cliff. 2015. Environmental Scoping report for the proposed high density residential township "Tanganani extension 7", to be located on a part of Portion 119 of the farm Diepsloot 388 JR, City of Johannesburg Municipality, Gauteng

**APPENDIX A:
GEOTECHNICAL REPORT**

**APPENDIX B:
BULK SERVICE REPORT**

**APPENDIX C:
ELECTRICAL SERVICES REPORT**

**APPENDIX D:
TRAFFIC IMPACT ASSESSMENT REPORT**

**APPENDIX E:
HERITAGE IMPACT ASSESSMENT REPORT**

**APPENDIX F:
ENVIRONMENTAL MANAGEMENT PROGRAMME**

**APPENDIX G:
SPECIALIST DECLARATION OF INDEPENDENCE
(TO FOLLOW AS PART OF FINAL BAR)**

**APPENDIX I:
PROOF OF BAR SENT TO DW&S**