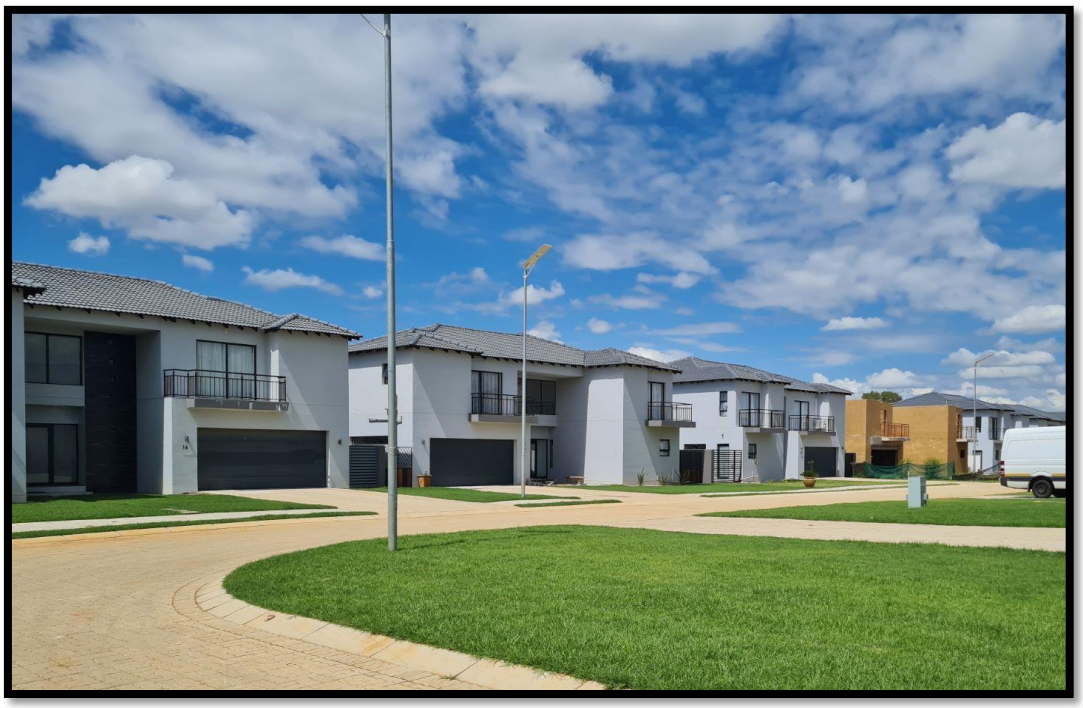
DRAFT SECTION 24G REPORT

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

In terms of Section 24G (1) (a)(vii) (aa)-(ee) of the National Environmental Management Act (Act 107 of 1998) (NEMA) as amended

The Legalization of the unlawful clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province.

Report Date: April 2021



Compiled by:

AB ENVIRO-CONSULT CC

7 Louis Leipoldt Street

Potchefstroom

2531

Cell: 083 5488 105

jp@abenviro.co.za

Compiled for:

Acetech Infra Pty Ltd

CONDITIONS OF USE

Although ***AB Enviro Consult CC*** exercises due care and diligence in rendering services and preparing documents, ***AB Enviro Consult CC*** accepts no liability, and the client, by receiving this document, indemnifies ***AB Enviro Consult CC*** and its directors, managers, agents and employees against all actions, claims, demands, losses, liabilities, costs, damages, and expenses rising from or in connection with services rendered, directly or indirectly by ***AB Enviro Consult CC*** and by the use of the information contained in this document.

****

****

This document is provided for sole use by the Client and is confidential to it and its professional advisers. No responsibility whatsoever for the contents of this Document will be accepted to any person other than the Clients. Any use which a third party makes of this Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties**.** ***AB Enviro Consult CC*** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Document. Without prejudice.

Applicant:	Acetech Infra Pty Ltd		
Company/ Closed Corporation / Firm Registered Name (if applicable)	Acetech Infra Pty Ltd		
Company / Closed Corporation Registration / Firm Number (if applicable)	2014/139939/07		
Contact person:	Ms. S. Mehta		
Contact person's position in company:	Director		
Postal Address:	6 Baden Powell Avenue, Golf View		
	Mahikeng	**Code:**	2745
Physical Address:	6 Baden Powell, Golf View		
	Mahikeng	**Code:**	2745
Telephone No:	082 902 7074	**Cell:**	071 078 0162
E-mail address:	info@melroseestates.co.za	**Fax:**	018 293 0671

Project Environmental Assessment Practitioner:	Mr J. P. de Villiers of AB Enviro Consult cc		
Company/ Closed Corporation Registered Name (if applicable)	AB Enviro Consult CC		
Company / Closed Corporation Registration Number (if applicable)	2000/016653/23		
Contact Person:	Mr. JP de Villiers		
Position in Company:	Environmental Assessment Practitioner (EAP)		
ID Number of Contact Person	700228 5035 084		
Postal Address:	7 Louis Leipoldt Street		
	Potchefstroom	**Code:**	2531
Physical Address:	7 Louis Leipoldt Street		
	Potchefstroom	**Code:**	2571
Telephone No:	018 294 5005	**Cell:**	082 5642 642
E-mail address:	jp@abenviro.co.za	**Fax:**	018 293 0671

Contents

1. PROJECT TITLE 6

2. INTRODUCTION 6

2.1 DESCRIPTION OF THE PROCESS FOLLOWED 8

2.2 ASSESSMENT PHASE 12

2.3 DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER 13

2.4 LEGAL AND OTHER REQUIREMENTS 15

3 DETAILS OF PROPERTY ON WHICH UNLAWFUL ACTIVITY TOOK PLACE: 21

4. DESCRIPTION OF THE ACTIVITY 26

5. NEED AND DESIRIBILITY 28

6. ALTERNATIVES 32

6.1 LAND USE ALTERNATIVES 32

7. DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE PROJEC 33

7.1. BIO-PHYSICAL ASPECTS 33

7.1.6. FLORA 37

7.1.7. FAUNA 40

7.2. SOCIO ECONOMIC FACTORS 47

8. ENVIRONMENTAL IMPACT ASSESSMENT 51

8.1 ASSESSMENT CRITERIA 51

Geographical attributes 52

Physical attributes 52

Biological attributes 52

Social attributes 52

Economic attributes 52

Heritage attributes 53

Cultural attributes 53

8.2 IMPACT ASSESSMENT 53

9. PUBLIC PARTICIPATION 66

9.1 Advertisement and Notice 76

9.2 DETERMINATION OF APPROPRIATE MEASURES 77

9.3 AUTHORITY PARTICIPATION 79

9.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES 87

9.5 COMMENTS AND RESPONSE REPORT 87

10 Environmental Management Programme 88
10.1 INTRODUCTION 88
10.2. Contents of the Environmental Management Programme 89
10.3. Details of Environmental Assessment Practitioner 90
10.4 Expertise of the Environmental Assessment Practitioner 92
PERSONAL PARTICULARS AND CAREER HISTORY OF PROF DE VILLIERS 92
ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS ..93
PROFESSIONAL QUALIFICATIONS AND REGISTRATIONS 93
ACADEMIC AND PROFESSIONAL QUALIFICATIONS MRS J.E. DU PLOOY ...93
10.5. DESCRIPTION OF THE ACTIVITY 94
10.6. DESCRIPTION OF THE PROPERTY 95
10.7. DESCRIPTION OF THE ENVIRONMENT THAT MAY BE AFFECTED BY THE PROJECT
10.7.1 BIO-PHYSICAL ASPECTS 99
10.7.1.1 GEOLOGY AND SOIL 99
10.7.1.2 TOPOGRAPHY 100
10.7.1.3 CLIMATE 100
10.7.1.4 SURFACE DRAINAGE, WETLANDS AND RIPERIAN ZONES 102
10.7.1.5 GROUND WATER 102
10.7.1.6 FLORA 103
10.7.1.8. AIR QUALITY 112
10.7.1.9 NOISE 114
10.7.1.11 ARCHAEOLOGY AND CULTURAL SITES 114
10.7.2 SOCIOLOGICAL AND ECONOMIC ISSUES 115
10.8. ENVIRONMENTAL MANAGEMENT OBJECTIVES AND TARGETS 117
10.9. ENVIRONMENTAL IMPACT MANAGEMENT OUTCOMES 120
10.9.1 ASSESSMENT CRITERIA 120
Geographical attributes 121
Physical attributes 121
Biological attributes 121
Social attributes 121
Economic attributes 121
Heritage attributes 121
Cultural attributes 121
10.9.2 ENVIRONMENTAL IMPACT MANAGEMENT OUTCOMES 122

10.10. MITIGATION MEASURES.....123
10.11. ENVIRONMENTAL AWARENESS PLAN.....142
10.12. MONITORING, AUDITING AND REPORTING 153
FINES 154
11. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS 155
11.1 GEO-TECHNICAL REPORT (See Appendix B for a copy of this report) 155
11.2 ECOLOGICAL HABITAT REPORT (SEE APPENDIX C).....156
11.3 HERITAGE IMPACT ASSESSMENT (HIA) (See Appendix D for a copy of this report) 158
12. CONCLUSIONS AND RECOMMENDATIONS 160
12.1 ENVIRONMENTAL IMPACT STATEMENT 160
12.2 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) 162
12.3 EAP OPINION 162
12.4 CONDITIONS RECOMMENDED TO BE INCLUDED IN ANY AUTHORISATION THAT MAY BE GRANTED BY THE COMPETENT AUTHORITY IN RESPECT OF THE APPLICATION .163
13. AFFIRMATION BY EAP 164

APPLICATION TO RECTIFY THE UNLAWFUL COMMENCEMENT OR CONTINUATION OF LISTED ACTIVITIES IN TERMS OF SECTION 24G OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO 107 OF 1998)

1. PROJECT TITLE

The Legalization of the unlawful clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province.

2. INTRODUCTION

The Applicant, **Acetech Infra Pty Ltd,** is new in the property development game as this is their first development. Before they have purchased the property on which the development took place, they were informed by the seller, as well as Officials from the Local Municipality, that the only Authorization that will be needed will be approval from the Mahikeng Local Municipality. They were also informed that the piece of land is already zoned as Residential. In addition to this, the SG diagram was already registered as per the township and the pegging was done, so this gave them the impression that they had already done the required authorisations. They were also informed by previous employees at the municipalities' planning department that they do not require an EIA as their proposed development is for a residential development on an area already zoned for Residential development and is surrounded by residential area.

The Applicant only became aware of the fact that they might have commenced with the construction of Melrose Estates without an environmental authorization (as it is required in terms of Section 24 of the *National Environmental Management Act ,* 1998 (Act No.107 of 1998), hereinafter referred to as "NEMA" read with Section 24F of NEMA) during the site investigation conducted by an Environmental Management Inspector (EMI) of the Department of Economic Development, Environment, Conservation and Tourism ("DEDECT') on 10 November 2020 and the receipt of a Notice of intention to issue a compliance notice.

As soon as the applicant became aware that Environmental Authorization was required, AB Enviro-Consult was appointed to obtain the necessary authorizations.

The unlawful commencement triggered listed activities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014. The development triggered the following regulations and listed activities:

Government Notice	Activity Number and Description	Project Description
GNR 327, 07 April 2017	Activity Number 27: The clearance of an area of 1 hectare or more, but less than 20 hectares, of indigenous vegetation.	The clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province.
GNR 327, 07 April 2017	Activity Number 67.: *"Phased activities for all activities* *i. listed in this Notice, which commenced on or after the effective date of this Notice; or* *ii. similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices; excluding the following activities listed in this Notice* • *17(i)(a-d);* • *17(ii)(a-d);* • *17(iii)(a-d);* • *17(iv)(a-d);* • *17(v)(a-d);* • *20;* • *21;* • *22;* • *24(i);* • *29;* • *30;* • *31;* • *32;*	The development is undertaken into four phases which are: • Phase one (1) consists of the construction of 37 double story residential housing units covering an area of extent of 2.8 hectares and a club house or health center; • Phase two (2) involve the construction of single story residential houses covering an area of extent of 1.1 hectares; • While phase three (3) and four (4) will be consisting of 45 to 50 flats and a shopping complex.

	• *34;* • *54(i)(a-b);* • *54(ii)(a-b);* • *54(iii)(a-b);* • *54(iiv(a-b);* • *54(v)(a-b);* • *54(iii)(a-b);* • 55; • *61;* • *64; and* • *65; or* *(ii) listed as activities* 5, 7, *B(ii), 11, 13, 16, 27(i) or 27(ii) in Listing Notice 2 of 2014 or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices; where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold."*	

The purpose of this document is to adhere to the requirements for the compilation of an Environmental Impact Assessment Report in terms of Section 24G (1) (a)(vii) (aa)-(ee) of the National Environmental Management Act (Act 107 of 1998) (NEMA) as amended for the Legalization of the unlawful commencement of the clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province.

2.1 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 2.4 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) On 13 July 2018 the Mahikeng Local Municipality approved Phase 1 of the development. See Appendix A.1.
2) On 6 September 2020 the Mahikeng Local Municipality approved Phase 2 of the development. See Appendix A.2.
3) On 12 September 2018 the Mahikeng Local Municipality issued a letter confirming the availability of bulk water and bulk sewer. See Appendix A.3.
4) On 10 November 2020 an Environmental Management Inspector (EMI) of the Department of Economic Development, Environment, Conservation and Tourism ("DEDECT') conducted a site investigation.
5) On 15 February 2021 DEDECT issued a Notice of intention to issue a compliance notice.
6) A response letter was submitted to DEDECT on 25 February 2021 and an addendum to the response letter was submitted to DEDECT on 23 March 2021. The purpose of the addendum was to confirm the listed activities that will have to be applied for.
7) On 26 March 2021 DEDECT responded with *"…the Department…is of the view that the activity on site has been conducted in the absence of due consideration of provisions of the legislation…"* and basically upheld their findings as was outlined in the notice of intention dated 15 February 2021.
8) AB Enviro was appointed to submit an application for consequences of unlawful commencement of activity in terms of section 24G of NEMA.
9) An Environmental Screening Process was conducted by the EAP to ensure that all the relevant Environmental Legislation is taken into consideration.
10) Desk top studies were conducted and included the Geo-Technical study that was already conducted.
11) Site inspections were carried out to verify the outcomes of the desktop studies.
12) A Botanical Fauna and Flora Habitat Study was conducted to assess the area and determine the impact of the activity on this variable.
13) A Heritage impact Assessment was conducted to ensure that no archaeological or heritage features has been impacted on.
14) A full Public Participation Process was followed to obtain inputs from interested and affected parties.
15) All the information obtained from the above mentioned processes was used to assess the Environmental Impact that the proposed development may have on the Environment and vice versa.
16) The inputs from the Specialists, interested and affected parties, together with the knowledge of the EAP was used to determine measures to avoid, mitigate and manage potential impacts. These measures are described in the Environmental Management Programme.

2.2 ASSESSMENT PHASE

(1) On application by a person who has committed an offence in terms of section 24F(2) the Minister or MEC, as the case may be, may direct the applicant to -

(a) compile a report containing -

(i) an assessment of the nature, extent, duration and significance of the impacts of the activity on the environment, including the cumulative effects;

(ii) a description of mitigation measures undertaken or to be undertaken in respect of the impacts of the activity on the environment;

(iii) a description of the public participation process followed during the course of compiling the report, including all comments received from interested and affected parties and an indication of how issues raised have been addressed;

(iv) an environmental management plan;

The assessment phase included the necessary investigations to assess the possible impacts of the development on the site and the surrounding environment.

The operation of the facilities is likely to result in a number of negative and positive impacts on the biophysical and social environments. The significance of these impacts can be mitigated by the implementation of an Environmental Management Programme.

The purpose of this Report is to document the outcome of the Assessment Phase of the project. The report fulfilled the requirements of the compilation of an Environmental Impact Assessment Report in terms of Section 24G (1) (a)(vii) (aa)-(ee) of the National Environmental Management Act (Act 107 of 1998) (NEMA) as amended.

Table 1 below provides a summary of the legislative requirements in terms of the compilation of an Environmental Impact Assessment Report in terms of Section 24G (1) (a)(vii) (aa)-(ee) of the National Environmental Management Act (Act 107 of 1998) (NEMA) as amended. Cross-references are provided in terms of the relevant section within this Report where the NEMA and Report requirements have been addressed.

Table 1: Environmental Impact Assessment Report in terms of Section 24G (1) (a)(vii) (aa)-(ee) of the National Environmental Management Act (Act 107 of 1998) (NEMA) as amended.

Section	**Description of Requirements for Impact Assessment Reports**	**Location in this report**
Section 24G (1) (a)(vii) (aa)	a description of the need and desirability of the activity	Paragraph 5
Section 24G (1) (a)(vii) (bb)	an assessment of the nature, extent, duration and significance of the consequences for or impacts on the environment of the activity, including the cumulative effects and the manner in which the geographical, physical,	Paragraph 8

Section	Description of Requirements for Impact Assessment Reports	Location in this report
	biological, social, economic and cultural aspects of the environment may be affected by the proposed activity	
Section 24G (1) (a)(vii) (cc)	a description of mitigation measures undertaken or to be undertaken in respect of the consequences for or impacts on the environment of the activity;	Paragraph 8
Section 24G (1) (a)(vii) (dd)	a description of the public participation process followed during the course of compiling the report, including all comments received from interested and affected parties and an indication of how the issues raised have been addressed;	Paragraph 9 and Appendix I
Section 24G (1) (a)(vii) (ee)	an environmental management programme	Paragraph 10

2.3 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

Over a period of 25 years (1996-2021) 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 Scientific Professions (400099/86)	Environmental Science
1994	Quality Auditor	ESKOM	Auditing
1998	Personnel & Verifying Auditor	SAATCA	Environmental Auditing
2006-2017	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

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

YEAR	Qualification	Institution	Field of Study
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

YEAR	Qualification/ Registration	Institution	Field of Study

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

YEAR	Qualification	Institution	Field of Study
1999	BA	PU FOR CHE	Geography, Tourism
2000	BA (Honns) Cum Laude	PU FOR CHE	Geography
2003	Masters 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
2019	Registered as Environmental assessment Practitioner	EAPASA Registration number: 2019/1573	

2.4 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.	NW:DEDECT	27 November 1998
The Bill of Rights, Constitution of South Africa, Section 27 (1)(b)	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: 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. Given that environmental management is founded partly on the principles of public participation, Section 195 of the Constitution is of primary relevance: (1) Public administration must be governed by the democratic values and	National Government	1994

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	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 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.	NW: DEDECT	7 April 2017
National Water Act (36 OF 1998)	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. The major objectives of the National Water Act are to: •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. 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.	Department of water and sanitation	1998
National Environmental Management: Biodiversity Act (NEMBA) (ACT NO. 10 OF 2004)	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	NW: DEDECT	2004

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	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. In terms of Chapter 4 of the Above Act: 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. (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. (2) The following categories of ecosystems may be listed in terms of subsection: (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; (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; (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 (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). (3) A list referred to in subsection (1) must describe in sufficient detail the location of each ecosystem on the list. 53 (1) The Minister may, by notice in the Gazette, identify any process or activity in		

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	a listed ecosystem as a threatening process. (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 as an area identified for the purpose of that section.		
National Environmental Management: Protected Areas Act (ACT NO. 57 OF 2003)	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: •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. 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	National Department of Environmental Affairs	2003

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
	before any of the kinds of protected areas are declared.		
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, DEDECT together with 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	Legislation consulted to determine whether a waste licence will have to be obtained for the development.	NW:DEDECT Waste Section	2008
National Environmental Management: Air Quality Act (Act 39 of 2004)	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.	Department of Environmental Affairs: Directorate Air quality management	2004
The Conservation of Agricultural Resources Act (Act 43 of 1983)	This Act regulates the flow pattern of runoff water, control of weeds and invader plants.	NW: Department of Agriculture	1983
National Veldt and Forest Fire Act (Act 101 of 1998)	Chapter 4 places a duty on owners to prepare and maintain firebreaks.	Department of Agriculture, Forestry and Fisheries	1998
National Forests Act, Act 84 of 1998 (NFA) DEDECT with GN1602 of December 2016.	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.	Department of Agriculture, Forestry and Fisheries	1998
Occupational Health and Safety Act (Act 85 of 1993)	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.	Department of Employment and labour	1993

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).

ADDITIONAL NATIONAL LEGISLATION

Other National Legislation, which has implications for environmental control on the site, includes:

- Conservation of Agricultural Resources Act (43 of 1983), regulation of the flow pattern of runoff water, control of weeds and invader plants;
- National Environmental Management Waste Act (59 of 2008)

- The Guidelines contained in the Document of the Department of Environmental Affairs and Tourism (Department of Environmental Affairs and Tourism, 1998) , regarding the implementation of the regulations under sections 21, 22 and 26 of the above mentioned act
- The Guidelines contained in the Document on Integrated Environmental Management (Department of Environmental Affairs,1992)
- The National Heritage Act (25/1999)
- Aide Memoir - Department of Water Affairs and Forestry (DWAF, 2003)
- Water Act (36/1998)
- Water Services Act (108/1997)
- Occupational Health and Safety Act, (1993/85)
- Mineral and Petroleum Resources Development Act (MPRDA) (Act No. 28 of 2002)
- The Mine Health and Safety Act (MHSA) (Act No. 29 of 1996)
- National Forest Act (84/1998)

SUSTAINABLE DEVELOPMENT

The principle of Sustainable Development has been established in the Constitution of the Republic of South Africa (108 of 1996) and given effect by NEMA. Section 1(29) of NEMA states that sustainable development means the integration of social, economic and environmental factors into the planning, implementation and decision-making process so as to ensure that development serves present and future generations.

Thus, Sustainable Development requires that:

- The disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- 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;
- 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;
- 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;
- Negative impacts on the environment, on people's environmental rights be anticipated; and, prevented, and where they cannot altogether be prevented, are minimised and remedied.

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).

3 DETAILS OF PROPERTY ON WHICH UNLAWFUL ACTIVITY TOOK PLACE:

The development is located approximately 1km east of the city centre of Mahikeng in an area known as Golf View on Erf 6439, Golf View, Mahikeng. The site falls in an area under the jurisdiction of the Mahikeng Local Municipality and the Ngaka Modiri Molema District Municipality within the North West Province. The development is bounded by Quigley Street (to the west), Tillard Street (to the north) and Gemsbok Street (to the east) and an existing urban housing development (to the south). The topography of the study area is relatively flat and open, with no rocky ridges or outcrops present.

Figure 1 (1:50 000 Topographical map of the area) and Figure 2 (Google Map Image of the area (Yellow polygon indicating the Golf Course and in relation to the site that is represented with a red polygon)) clearly illustrates that the site has been used as a Golf Course in the past and as such was zoned as a Park erf. The whole erf on which the Golf Course was situated was called Erf 1645 and the Erf on which this development took place was called Erf 6439.

On 25 November 2005 the Mafikeng Local Municipality wrote a letter to the Surveyor-General informing him that Erf 6439 being a Portion of the Remainder of Erf 1645 was subdivided into 89 erven with erf numbers 9142 to 9231 allocated to it. This letter also notified the Surveyor-General that *"…in terms of Section 137 of the Municipal Ordinance No. 20 of 1974 that Erf 6439, a portion of Erf 1645 (Park), Mafikeng Extension 18, as indicated on the attached Sketch Plan, having been properly effected in accordance with the provision of the Ordinance and as approved by Council, has been* ***permanently closed and zoned for residential purposes****."*

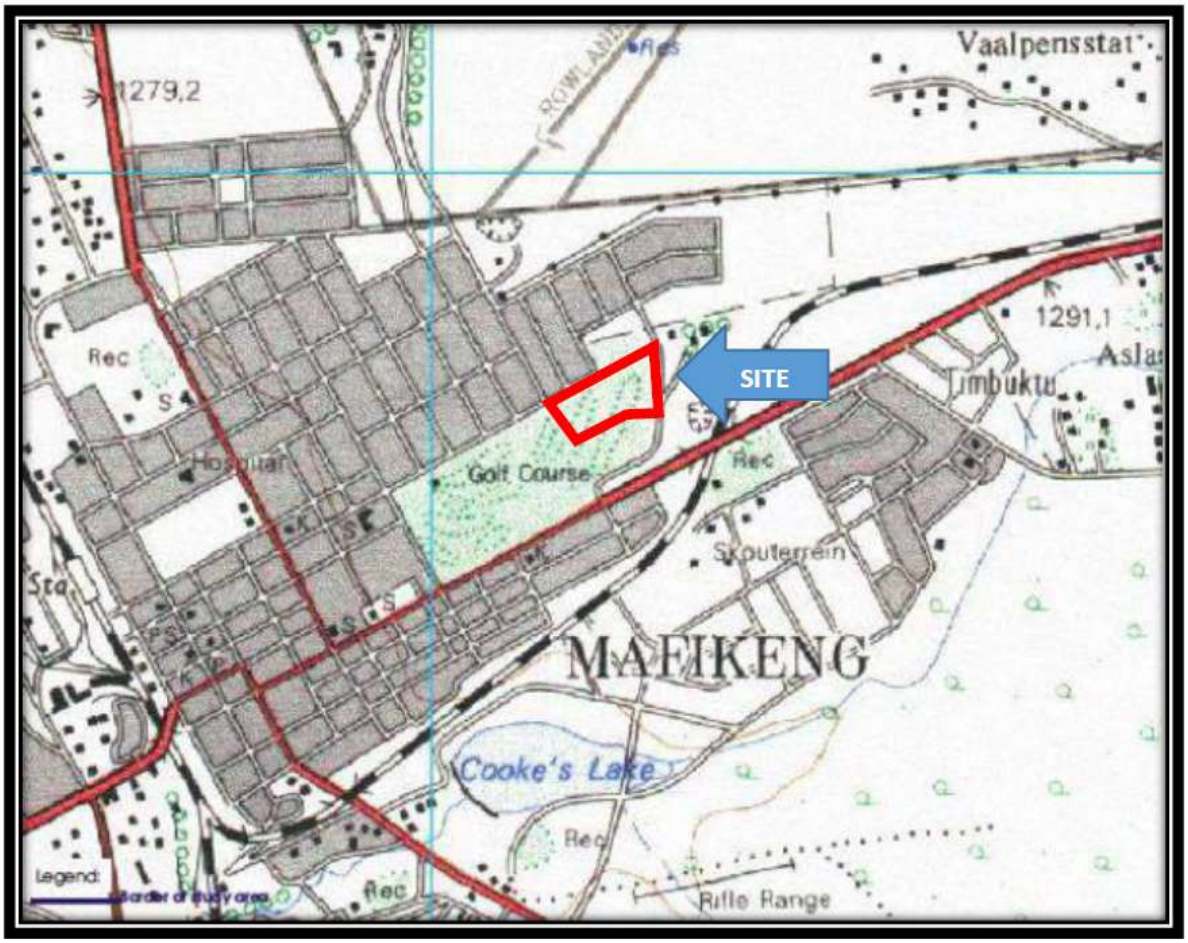


Figure 1: 1:50 000 Topographical map of the area

Figure 2: Google Map Image of the area (Yellow polygon Indicating the Golf Course and in relation to the site that is represented with a red polygon))

Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. Photograph 1 is an illustration of remnants of illegal dumping that took place on site. The site is surrounded by urban development. See Photograph 2 and 3.

Photograph 1. Illegal dumping that took place on site

Photograph 2. The site is surrounded by urban development

Photograph 3. View of part of the site (in the foreground) and adjacent urban area (in the background).

Vegetation is transformed at areas where buildings have been constructed. Remaining vegetation appears to be modified and degraded. Threatened animal and plant species, or any other animal or plant species of particular conservation concern appear to be absent at the site. Site is isolated mostly by urban surroundings and the scope for the site to be a corridor of particular conservation

importance is small. The scope for the vegetation at the site to be restored and conserved is small. Ecological sensitivity at the remaining vegetation at the site is low (Figure 3). Based on the present survey of adjacent areas and the remaining vegetation, the ecological sensitivity of the area where buildings have recently been constructed would probably have been low as well.

Figure 3 Indications of ecological sensitivity at the site.

	Red outline	**Boundaries of the site**
	Light yellow outline and shading	**Low Sensitivity**

Registered Land Owner:	Acetech Infra Pty Ltd		
Contact Person:	Ms. S. Mehta		
Postal Address:	6 Baden Powell Avenue, Golf View		
	Mahikeng	**Code:**	2745
Physical Address of Land Owner:	6 Baden Powell, Golf View		

	Mahikeng	**Code:**	2745
Telephone No:	082 902 7074	**Cell:**	071 078 0162
E-mail address:	info@melroseestates.co.za	**Fax:**	018 293 0671

Site Co-ordinates

The co-ordinates should be in degrees, minutes and seconds using the Hartebeeshoek94 WGS84 co-ordinate system.

Latitude (S):			**Longitude (E):**		
26°	58'	01.39"	24°	42'	48.54"

4. DESCRIPTION OF THE ACTIVITY

The development entails the clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province. See Figure 5 for a copy of the layout plan for phase 2. The development is undertaken into four phases which are:

- Phase one (1) consists of the construction of 37 double story residential housing units covering an area of extent of 2.8 hectares and a club house or health center (See Photograph 4);
- Phase two (2) involve the construction of single story residential houses covering an area of extent of 1.1 hectares (See Photograph 5;
- While phase three (3) and four (4) will be consisting of 45 to 50 flats and shopping complex

Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. The formalization of this area into a residential area is welcomed by the community as these activities have stopped.

This is one of the first secured residential estate of its kind in Mafikeng. The only other one is Leopard Park which was done probably 30 years ago and it only offers stands for sale where the clients must build their own houses costing anywhere between 2.5mil-4mil. The development will be offering housing options within a varied price range. The development provides clients with a turnkey housing option within the secured environment.

Figure 5: Phase 2 layout plan

Photograph 4: Double story houses were constructed as part of phase one (1).

Photograph 5: Phase two (2) involve the construction of single story residential houses

5. NEED AND DESIRIBILITY

Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. The formalization of this area into a residential area is welcomed by the community as these activities have stopped.

This is one of the first secured residential estate of its kind in Mafikeng. The only other one is Leopard Park which was done probably 30 years ago and it only offers stands for sale where the clients must build their own houses costing anywhere between 2.5mil-4mil. The development will be offering housing options within a varied price range. The development provides clients with a turnkey housing option within the secured environment.

Community involvement

The applicant is committed to giving back to the local community by means of job opportunities as well as charity events. The first charity event was held during July 2018; donating to a school for children with special needs. Please see Photograph 6 a and b. The second event was held during December 2018 (See Photograph 7) and the third event was held in February 2019. See Photograph 8.

Photograph 6a: July 2018: donations to a school for children with special needs

Photograph 6b: July 2018: donations to a school for children with special needs

Photograph 7: The second event was held during December 2018

Photograph 8: The third event was held in February 2019

In terms of local businesses, the applicant has worked with a range of suppliers some of which are:

Build It Mafikeng
Builders Express Mafikeng
Molopo Bricks

Mmabatho Crushers
NW Kitchens and Cupboards

They have also added additional long-term revenue for the municipality with all individual rates and taxes accounts being opened as part of the development. Also, the additional revenue from all the plan submissions and approvals. All the houses are NHBRC registered, which means income generated for NHBRC.

In the National Framework for Sustainable Development (NFSD) it is stated that *"the achievement of sustainable development is not a once-off occurrence and its objectives cannot be achieved by a single action* or *decision. It is an ongoing* process *that requires* a *particular set of values and attitudes in which economic, social and environmental assets that society has at its disposal, are managed in* a *manner that sustains human well-being without compromising the ability of future generations to meet their own need.* The NFSD further continues to emphasize that South Africa's current development path in certain instances reflects signs of being unsustainable in the long-term. It highlights that a large percentage of growth in economic activity (measured in terms of its contribution to the GDP) is achieved by *"consuming' natural resources and degrading our habitat at accelerating rates with the inevitable consequence that future economic growth and development objectives will be prejudiced. "*

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion",* whilst ensuring that such growth is *"ecologically sustainable".* In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably.

The local municipality is aware of the need to integrate urban settlements, with a view to reduce travel distances to the areas of employment opportunities. It also addresses measures to promote compact and connected growth opportunities, such as the identification of revitalisation zones, densification and mixed land use zones. For any development to be sustainable and viable, land development and planning should ensure that communities are located close to job opportunities, social facilities and **basic services**.

There is a definite need for the residents to have reasonable access to opportunities and facilities that supports living in the urban Settlement. It is the responsibility of the local municipality to ensure that the residents have reasonable access to community services and amenities, as well as employment opportunities and that the form of land development need to provide for basic needs in an affordable way. The proposed development will be in line with this principle by ensuring that people living in the area do in fact have reasonable access to opportunities and facilities.

Although the emphasis is on housing, complimentary land uses have been included in the township. People want easy access to job opportunities and shops and want their living environment to be placed at strategic positions with good access routes in close proximity to these amenities.

A mixed land use development is *socially responsible* based on the following:

- It covers the mixed and lower income bracket by providing a higher density housing option;

- The development will include retail and commercial activities;
- Commercial erven can accommodate a shopping centre, to service the existing formalised settlements in the area. The commercial node will:
    - Promote entrepreneurial services and products;
    - Be within walking distance to places of refreshment and trade for residents;
    - Provide Job opportunities; and
    - Improve neighbourhood quality

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.

6. ALTERNATIVES

One of the objectives of an EIA is to investigate alternatives to the proposed project. The IEM procedure stipulates that the environmental investigation needs to consider feasible alternatives for any 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 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 impact assessment process. Alternatives should be considered as a norm within the Environmental Process (S. Cliff, 2015).

The alternatives considered for the proposed development includes land use alternatives (including the No-go option). The various alternatives have been assessed in terms of environmental, social and technical feasibility.

6.1 LAND USE ALTERNATIVES

6.1.1 MIXED LAND USE TOWNSHIP ALTERNATIVE (ALTERNATIVE 1)

The developer have produced the proposed layout plan. The proposed township will comprise the following:

- Phase one (1) consists of the construction of 37 double story residential housing units covering an area of extent of 2.8 hectares and a club house or health center;
- Phase two (2) involve the construction of single story residential houses covering an area of extent of 1.1 hectares;
- While phase three (3) and four (4) will be consisting of 45 to 50 flats and shopping complex

Although the emphasis is on housing, complimentary land uses have been included in the township. People want easy access to job opportunities and shops and want their living environment to be placed at strategic positions with good access routes in close proximity to these amenities.

A mixed land use development is *socially responsible* based on the following:

- It covers the mixed and lower income bracket by providing a higher density housing option;
- The development will include supporting social infrastructure (The club house and health centre) as well as retail and commercial activities;
- Commercial erven can accommodate a shopping centre, to service the existing formalised settlements in the area. The commercial node will:
    - Promote entrepreneurial services and products;
    - Be within walking distance to places of refreshment and trade for residents;
    - Provide Job opportunities; and
    - Improve neighbourhood quality.

6.1.2 SINGLE LAND USE HOUSING ONLY ALTERNATIVE (ALTERNATIVE 2)

Providing only one land use type (i.e., housing), mixed income development and social integration across race and income levels, which cannot be achieved.

By restricting a township to one land use only, the above benefits to the local community, and subsequent council area, cannot be realised, and hence, is not a preferred land use option.

6.1.3 NO-GO ALTERNATIVE (ALTERNATIVE 3)

The only other alternative that exists for the proposed development is the "no-go" option which will imply that the status quo will prevail. This is unacceptable, as other land parcels will have to be sourced to provide for this need within the community. This will imply that infill development will not take place and will result in urban sprawl.

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

7.1. BIO-PHYSICAL ASPECTS

7.1.1 GEOLOGY AND SOIL

The site is underlain by basaltic amygdaloidal lava, agglomerate & tuff of the Allanridge Formation (Ra), and amygdaloidal lava& tuff of the Rietgat Formation (Rr), Platberg Group, of the Ventersdorp Supergroup, and the site is covered by Kalahari sand and calcrete. Surficial deposits include the quaternary aeolian Kalahari sand and limestone, covering the lithology. Consultation of the 1:250 000 Mafikeng geological map indicates at the investigated area is underlined by ferricrete & weathered granite. Naturally this area is covered with the thick layer of silty/colluviums sandy soil and clayey subsoil The sand seems to contain some pinholes which indicate they may be collapsible with the estimation of about 20mm collapsibility. The sandy material is due to the transportation by means of the natural causes e.g. wind and rain. The top sandy soils generally tend to be loose and could easily be excavated and a sample was not taken. The soil profiling conducted during the investigations indicates that the underlain material constitutes of clayey horizons which is characterised by shattering and high expansive potential. The depths of natural material varied from (0.600-2.5), (0.700-2.2) and (0.800-2.2) respectively. During profiling the material showed

consistency and constitutes of dark yellowish brown to light yellowish weathered granite and diabase gravelly materials.

The site has been classified into one site class designation zone according to the NHBRC classification; namely site class designation H/H1 defined by clayey horizon.

The foundation option recommended for the said development is raft foundations. Remove unsuitable soil and replace with suitable material and compact to 95 % Mod Ashto dry density. Excavate footings to a depth of 0.8m. Alternatively strip foundation is recommended which will be more economical for the developer as mentioned above. The findings of geotechnical investigation indicates that the proposed site for development is suitable for the development provided all the guidelines are followed as outlined in the report. Areas of termite and other biotic activity were not visible but however should be done to prevent damage to structures due to differential settlements. The biotic activity is generally limited to the upper soil horizon. Fill should be place layers not exceeding 200mm.

7.1.2 TOPOGRAPHY

The site is located on a plain surface dipping slightly from northeast to southwest. The highest elevation occur along the eastern border where a maximum of around 1294 meters is reached. The lowest point in the development occur at the extreme southwest where the elevation is 1290. The maximum elevation difference is approximately 4m over a distance of 450.

A detailed site survey has been carried out to establish levels. The Engineering report and the Layout plan address issues regarding drainage of the site.

7.1.3 CLIMATE

The climate of the area is typical of the South African interior. In the discussion of this variable, certain aspects of rainfall, temperature and wind that can influence the project will be highlighted.

It must be noted that the climatic data are recorded in the Department of Environmental Affairs (1988) climatic data records. Data for Mafikeng weather station (0508/2610) is available. The station has continuous records since 1920.

7.1.3.1 Rainfall

The average annual rainfall for the area is 553mm per annum. The highest annual rainfall recorded during the period for which the record is available is 868 mm (1918), while a yearly low of 265mm was recorded in 1930. Of note is the maximum-recorded daily rainfall of 101mm that was recorded on 16/12/1942.

The highest recorded monthly rainfall was recorded during January 1976 namely 360mm. Of importance is the fact that monthly minima of zero rainfall have been recorded for 6 months of the year.

The variability of rainfall as well as the high intensity events will definitely influence the project. On average however, the impact of rainfall can be considered as positive, as sufficient water is generally available for sustaining vegetation. Extreme dry conditions during dry spells will negatively affect the project due to the secondary effects on vegetation as well as the possibility of fire hazards. Extreme maximum events can also have a negative effect on the project during all its phases.

The overall impact can therefore be considered to be "variable" during the construction and operational phases (local in extent and long term in duration). The likelihood that these impacts may occur is probable, medium in intensity and significance. Steps to mitigate negative effects will be described in various sections of the Management Plan.

Due to the scale of the operation, the rainfall of the area cannot be affected by the project and is therefore "Not Applicable".

7.1.3.2 Temperature

The average daily maximum temperature for the winter months for the area is approximately 20º C. The average daily minimum for that time of the year is in the order of 4,5º C.

During the summer months, the average daily maximum is in the order of 29º C and the daily average minimum approximately 16ºC. The highest daily maximum recorded was 40,2ºC while the lowest recorded temperature was -2,5ºC.

In combination with a dry spell, such hot temperatures may be favourable for the spreading of veldfires.

The general impact of this variable on the project can be considered as positive during the construction and operational phases. The impacts can however be considered as having low intensity impacts of low significance. The extent is local and short term in duration.

Due to the scale of the project, it is clear that it will have no impact on the environment".

7.1.3.3 Wind

The average wind direction for the area during the summer months is from the north-to-north easterly quadrant, while during the early spring the direction is more north westerly. Southerly winds generally occur during the winter, but are not frequent. Normally very little wind is experienced during the winter due to the presence of the high-pressure cell situated over the country during that time of the year.

The wind speeds are normally fairly low, but high wind speeds may occur during early spring and during thundershowers.

Wind can be considered as having a low intensity, and a low significance negative impact on the construction and operational phases of the project. The probability is probable and the impacts are local but short in duration. The project can have no influence on the wind and is therefore "not applicable.

7.1.3.4 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.

7.1.4 SURFACE DRAINAGE

The area lies within the drainage basin of the Molopo River. The study area itself is situated on an area drained by overland flow. No streamlines are found on the proposed site for the project. Drainage occurs in a South-westerly direction towards the Molopo River that is situated 1,1 km south of the site.

No wetlands or riparian zones are found on or near the site

No erosion by sheet flow is evident on site. Surface drainage will have an influence on the project on a local scale and long in duration. The influence is positive in the sense that no major ground works are necessary to overcome possible erosion by sheet flow. The intensity and significance is low and of a probable probability.

The project will have a negative influence on the environment during the construction phase as the natural overland flow will be disturbed during this phase. If the prescribed management plan for the operational phase is adhered to, no undue stress will be placed on the environment - a positive impact can be expected. The likelihood of these impacts occurring is probable, but the intensity and significance, are judged low. The extent is local and the duration long.

7.1.5. GROUND WATER

The permanent or perched water table on site is deeper than 1,5 m below ground surface. The underground water table in the area is normally deep because of the geology of the area. The likelihood of problems arising from it is not very large if proper steps are taken to prevent possible pollution infiltration into the groundwater.

The impact and significance of this variable is considered low, probable but with a low significance.

The project could adversely affect ground water if proper steps are not implemented in order to prevent pollution from reaching the groundwater. If proper mitigation and pollution prevention steps are taken during the planning, implementation and post-construction phases it is highly unlikely that the groundwater will be affected. The eventual influence should therefore be one of low significance, probability and intensity.

Possible infiltration into the groundwater have been taken into account. During the construction phase, no spills of lubricants or construction worker sewage should be allowed to pollute the ground water. Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures, especially within these relative flat areas.

7.1.6. FLORA

The site is situated at the Grassland Biome which is represented by the Klerksdorp Thornveld vegetation type (Mucina & Rutherford, 2006). A brief overview of the vegetation type, which serves as an outline of the ecological context of the site, follows.

Klerksdorp Thornveld (Gh 13)

Distribution: In South Africa the Klerksdorp Thornveld is present in the North West Province in two sets of patches, one in the Wolmaransstad, Ottosdal and Hartbeesfontein region, and the other from the Botsalano Game Park north of Mafikeng in the vicinity of Madibogo in the south. Altitude for the entire vegetation type is 1260 – 1580 m (Mucina & Rutherford 2006).

Vegetation and landscape features: Plains or slightly irregular undulating plains with open to dense *Acacia karroo* bush clumps in dry grasslands (Mucina & Rutherford 2006). Geology and soils: Shale, slate and quartzite of the Pretoria Group with interlaid diabase sills and Hekpoort lava supporting relatively shallow and rocky soils (Glenrosa and Mispah forms). Equally represented are eutrophic red plinthic soils (Hutton form) derived mainly from a thick succession of volcanics and sediments of the Ventersdorp Supergroup (Mucina & Rutherford 2006).

Climate: Warm-temperate, summer-rainfall region, with overall mean annual precipitation of 533 mm. Summer temperatures are high. Frequent frosts occur in winter (Mucina & Rutherford 2006).

Important taxa of the Klerksdorp Thornveld listed by Mucina & Rutherford (2006): Small Trees: *Acacia karroo, Acacia caffra, Celtis africana, Searsia lancea, Ziziphus mucronata.* Tall Shrubs: *Acacia hebeclada, Diospyros lycioides* subsp. *lycioides, Ehretia rigida, Grewia flava, Gymnosporia buxifolia, Searsia pyroides, Tarchonanthus camphoratus.* Woody Climber: *Asparagus africanus*. Low Shrubs:

Asparagus laricinus, Asparagus suaveolens, Felicia muricata, Anthospermum hispidulum, Anthospermum rigidum subsp. *pumilum, Aptosimum elongatum, Gnidia capitata, Gomphocarpus fruticosus* subsp. *fruticosus, Helichrysum dregeanum, Leucas capensis, Pavonia burchellii, Pentzia globosa, Solanum supinum* var. *supinum, Triumfetta sonderi, Ziziphus zeyheriana*. Graminoids: *Aristida congesta, Cynodon dactylon, Eragrostis lehmanniana, Eragrostis trichophora, Microcloa caffra, Panicum coloratum, Sporobolus fimbriatus, Themeda triandra, Andropogon shirensis, Anthephora pubescens, Aristida junciformis* subsp. *galpinii, Aristida stipitata* subsp. *graciliflora, Brachiaria nigropedata, Brachiaria serrata, Bulbostylis burchellii, Cymbopogon pospischilii, Digitaria eriantha, Diheteropogon amplectens, Elionurus muticus, Eragrostis curvula, Eragrostis obtusa, Eragrostis racemosa, Eragrostis superba, Eustachys paspaloides, Heteropogon contortus, Setaria sphacelata, Sporobolus africanus, Tragus berteronianus, Trichoneura grandiglumis, Triraphis andropogonoides.* Herbs: *Acalypha angustata, Acanthospermum australe, Berkheya onopordifolia* var. *onopordifolia, Berkheya setifera, Blepharis integrifolia* var. *clarkei, Chamaesyce inaequilatera, Chascanum adenostachyum, Dicoma macrocephala, Helichrysum nudifolium* var. *nudifolium, Hermannia lancifolia, Hibiscus pusillus, Jucticia anagalloides, Lippia scaberima, Nidorella microcephala, Nolletia ciliaris, Pollichia campestris, Rhyncosia adenodes, Salvia radula, Selago densiflora, Teucrium trifidum, Tolpis capensis.* Geophytic Herbs: *Bulbine narcissifolia, Ledebouria marginata, Ornithogalum tenuifolium* subsp. *tenuifolium, Raphionacme hirsuta.* Herbaceous Climber: *Rhynchosia venulosa.*

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

Vegetation at the site appears to be degraded, modified and in some areas where buildings have recently been constructed, transformed. Remaining vegetation has a conspicuous grass layer, some indigenous herbs, alien invasive weeds and mostly shrub-height *Vachellia tortilis*, *Vachellia karroo* and *Ziziphus mucronata*. Other indigenous woody species that are present are *Searsia pyroides* and *Grewia flava*. The alien invasive tree *Melia azedarach* also occurs at the site. Remains of the alien invasive *Eucalyptus camaldulensis* (Red Gum), a tree species that are widespread in the surrounding area, are found at the site. Indigenous grass species include *Enneapogon cenchroides*, *Eragrostis rigidior*, *Panicum maximum*, *Aristida congesta*, *Cynodon dactylon*, *Eragrostis lehmanianna*, *Chloris virgata*, *Eragrostis superba*, *Heteropogon contortus* and *Tragus berteronianus*. Indigenous forbs and dwarf shrubs include *Gazania krebsiana*, *Bulbine narcissifolia*, *Barleria macrostegia*, *Chamaesyce inaquilatera*, *Felicia muricata*, *Pollichia campestris* and *Nidorella microcephala*. Indigenous climbing herbs such as *Merremia palmata* and *Pentarrhinum insipidum* as well as the alien invasive climbing herb *Ipomoea purpurea* are conspicuous at parts of the site.

Alien invasive weed species are visible at previously cleared and previously cultivated areas. These alien invasive weeds include *Flaveria bidentis*, *Datura ferox*, *Argemone ochroleuca*, *Gomphrena celosioides*, *Schkuhria pinnata*, *Tagetes minuta*, *Conyza bonariensis*, *Verbena aristigera*, *Verbesina encelioides* and *Verbena aristigera*.

Wetlands and rocky ridges appear to be absent at the site.

Grassland at the site is represented by the Klerksdorp Thornveld (Gh 13) which is not listed as a Threatened Ecosystem according to the National List of Threatened Ecosystems (2011).

No Threatened or Near Threatened plant or animal species appear to be resident at the site. No other plant or animal species of particular conservation concern appear to be present at the site.
The scope for the site to be part of a corridor of particular conservation importance is small.
Ecological sensitivity at the site is low. See Figure 6.

Figure 6: Indications of ecological sensitivity at the site.

—	**Red outline**	**Boundaries of the site**
—	**Light yellow outline and shading**	**Low Sensitivity**

Based on the present survey at the site and adjacent areas the ecological sensitivity of the area where the buildings have recently been constructed is likely to have been similar, low. There are no indications that the site where the buildings have recently been constructed would have contained sensitive ecosystems or sensitive species.

Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are moderate or low.

If the development is approved a key issue would be continued monitoring and eradication of alien invasive plant species. It is in particular alien invasive species such as *Melia azedarach* (Syringa) and invasive *Prosopis glandulosa* (Mesquite) which should not be allowed to establish.

If the development is approved an opportunity presents itself to cultivate indigenous plant species which would benefit urban nature conservation.

7.1.7. FAUNA

Mammals

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). 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
Chrysospalax villosus Rough-haired golden mole	Vulnerable	No	No
Cloeotis percivali Short-eared Trident Bat	Vulnerable/ Near-threatened	No	No
Diceros bicornis Black rhinoceros	Critically Endangered	No	No
Lycaon pictus African wild dog	Endangered	No	No
Loxodonta africana African elephant	Vulnerable	No	No
Mystromys albicaudatus White-tailed mouse	Endangered	No	No
Neamblysomus julianae Juliana's Golden Mole	Critically Endangered	No	No
Panthera leo Lion	Vulnerable	No	No
Rhinolophus blasii Blasi's Horseshoe Bat	Vulnerable	No	No
Smutsia temminckii Ground Pangolin	Vulnerable	No	No

Near threatened mammal species known to occur in 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 to be found based on habitat assessment
Ceratotherium simum White Rhinoceros	Near threatened	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
Myosorex varius Forest shrew	Uncertain	No	No

Birds

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). 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
Aegypius tracheliotos	**Lappet-faced Vulture**	Vulnerable	No	No
Anthropoides paradiseus	**Blue Crane**	Vulnerable	No	No
Aquila rapax	**Tawny Eagle**	Vulnerable	No	No
Ardeotis kori	**Kori Bustard**	Vulnerable	No	No
Balearica regulorum	**Grey Crowned Crane (Mahem)**	Vulnerable	No	No

Botaurus stellaris	**Eurasian Bittern**	Critically Endangered	No	No
Circus ranivorus	**African Marsh- Harrier**	Vulnerable	No	No
Crex crex	**Corn Crake**	Vulnerable	No	No
Eupodotis senegalensis	**White-bellied Korhaan**	Vulnerable	No	No
Falco naumanni	**Lesser Kestrel**	Vulnerable	No	No
Geronticus calvus	**Southern Bald Ibis**	Vulnerable	No	No
Gorsachius leuconotus	**White-backed Night-heron**	Vulnerable	No	No
Gypaetus barbatus	**Bearded Vulture**	Endangered	No	No
Gyps africanus	**White-backed Vulture**	Vulnerable	No	No
Gyps coprotheres	**Cape Vulture**	Vulnerable	No	No
Pelecanus rufescens	**Pink-backed Pelican**	Vulnerable	No	No
Polemaetus bellicosus	**Martial Eagle**	Vulnerable	No	No
Rhynchops flavirostris	**African Skimmer**	Endangered	No	No
Sagittarius serpentarius	**Secretarybird**	Vulnerable	No	No
Sarothrura ayresi	**White-winged Flufftail**	Critically Endangered	No	No
Tyto capensis	**African Grass-Owl**	Vulnerable	No	No

*** Though some of the above bird species that roams over large areas may ocassionally 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). 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 dependant on the site as breeding area or habitat.

Species	Common name	Threatened Status	Recorded at site during survey	Likely to use site breeding area or habitat
Certhilauda chuana	**Short-clawed Lark**	Near threatened	No	No
Charadrius pallidus	**Chestnut-banded Plover**	Near threatened	No	No
Ciconia nigra	**Black Stork**	Near threatened	No	No
Circus macrourus	**Pallid Harrier**	Near threatened	No	No
Eupodotis caerulescens	**Blue Korhaan**	Near threatened	No	No

Falco biarmicus	**Lanner Falcon**	Near threatened	No	No
Falco peregrinus	**Peregrine Falcon**	Near threatened	No	No
Glareola nordmanni	**Black-winged Pratincole**	Near threatened	No	No
Leptoptilos crumeniferus	**Marabou Stork**	Near threatened	No	No
Mirafra cheniana	**Melodious lark**	Near threatened	No	No
Mycteria ibis	**Yellow-billed Stork**	Near threatened	No	No
Phoenicopterus minor	**Lesser Flamingo**	Near threatened	No	No
Phoenicopterus ruber	**Greater Flamingo**	Near threatened	No	No
Rostratula benghalensis	**Greater Painted-snipe**	Near threatened	No	No
Sternia caspia	**Caspian Tern**	Near threatened	No	No

Beetles

Beetles of particular conservation priority

Fruit chafer species (Coleoptera: Scarabaeidae: Cetoninae) in the Gauteng Province and North-West Province which are of known high conservation priority.

Species	Threatened Status	Recorded at site during survey	Likely to be resident based on habitat assessment
Ichnestoma stobbiai	Uncertain	No	No
Trichocephala brincki	Uncertain	No	No

Scorpions

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.

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

Reptiles

Reptiles of particular high conservation priority

The following tables list possible presence or absence of threatened reptile or near threatened reptile species in the study area. The Atlas and Red List of Reptiles of South Africa, Lesotho and South Africa (Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers, 2014) has been used as the main source to compile the list for assessment.

Threatened reptile species in North West Province. Main Source: (Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers, 2014). 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
Crocodylus niloticus Nile Crocodile	Vulnerable	No	No	No

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

Amphibians of particular conservation concern

No frog species that occur in the North West are listed as Threatened species (Vulnerable, Endangered or Critically Endangered) or Near Threatened species according to IUCN Amphibian Specialist Group (2013). Table 4.17 lists *Pyxicephalus adspersus* (Giant Bullfrog) as Least Concern globally. According to the Biodiversity Management Directorate of GDARD (Gauteng Department of Agriculture and Rural Development) (2014) there are no amphibians in Gauteng that qualify for red listed status (red listed here indicates a catecory of special conservation concern such as threatened or near threatened). Suitable habitat for Giant Bullfrog at site appears to be absent.

Near threatened 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

Pyxicephalus adspersus Giant Bullfrog	Near threatened (Currently Least Concern)	No	No	No

Assessment of invertebrate species of particular conservation concern

Butterflies of particular conservation concern

Studies about the vegetation and habitat of threatened butterfly species in South Africa showed that ecosystems with a unique combination of features are selected by these often-localised threatened butterfly species (Deutschländer and Bredenkamp 1999; Edge 2002, 2005; Terblanche, Morgenthal & Cilliers 2003; Lubke, Hoare, Victor & Ketelaar 2003; Edge, Cilliers & Terblanche, 2008). Threatened butterfly species in South Africa can then be regarded as bio-indicators of rare ecosystems.

Four species of butterfly in Gauteng Province and North West Province combined are listed as threatened in the recent butterfly conservation assessment of South Africa (Mecenero *et al*., 2013). The expected presence or not of these threatened butterfly species as well as species of high conservation priority that are not threatened, at the site sa listed in the following Tables.

Threatened butterfly species in North West Province and Gauteng Province. Sources: Henning, Terblanche & Ball (2009), Mecenero *et al*. (2013). 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 possibility, Unlikely, Highly unlikely
Aloeides dentatis dentatis Roodepoort Copper	**Endangered**	No	Highly unlikely
Chrysoritis aureus Golden Copper	**Endangered**	No	Highly unlikely
Lepidochrysops praeterita Highveld Blue	**Endangered**	No	Highly unlikely
Orachrysops mijburghi Mijburgh's Blue	**Endangered**	No	Highly unlikely

Butterfly species of the North West Province and Gauteng Province that are not threatened and not near threatened but of which are of particular conservation concern and listed in the **Rare** category (Mecenero *et al*., 2013). 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
Colotis celimene amina Lilac Tip	**Rare (Low density)**	No	Highly unlikely
Lepidochrysops procera Savanna Blue	**Rare (Habitat specialist)**	No	Highly unlikely
Metisella meninx Marsh Sylph	**Rare (Habitat specialist)**	No	Highly unlikely
Platylesches dolomitica Hilltop Hopper	**Rare (low density)**	No	Highly unlikely

Beetles of particular conservation priority

Fruit chafer species (Coleoptera: Scarabaeidae: Cetoninae) in the Gauteng Province and North-West Province which are of known high conservation priority. No *Ichnestoma stobbiai* or *Trichocephala brincki* were found during the surveys. There appears to be no suitable habitat for *Ichnestoma stobbiai* or *Trichocephala brincki* at the site. There appears to be no threat to any of the fruit chafer beetles of particular high conservation priority if the site were developed.

Species	Threatened Status	Recorded at site during survey	Likely to be resident based on habitat assessment
Ichnestoma stobbiai	Uncertain	No	No
Trichocephala brincki	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. None of these rock scorpions have been found at the site and the habitat does not appear to be optimal.

Species	Threatened Status	Recorded at site during survey	Likely to be resident at site based on habitat assessment

Hadogenes gracilis	Uncertain	No	No
Hadogenes gunningi	Uncertain	No	No

Ecological Sensitivity at the site

Ecological sensitivity at the site is low. Based on the present survey at the site and adjacent areas the ecological sensitivity of the area where the buildings have recently been constructed is likely to have been similar, low. There are no indications that the site where the buildings have recently been constructed would have contained sensitive ecosystems or sensitive species.

7.2. SOCIO ECONOMIC FACTORS

7.2.1. SOCIAL AMENITIES

Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. The formalization of this area into a residential area is welcomed by the community as these activities have stopped.

This is one of the first secured residential estate of its kind in Mafikeng. The only other one is Leopard Park which was done probably 30 years ago and it only offers stands for sale where the clients must build their own houses costing anywhere between 2.5mil-4mil. The development will be offering housing options within a varied price range. The development provides clients with a turnkey housing option within the secured environment.

The local municipality intends to promote the infilling of open spaces between existing townships in order to provide the necessary housing for people living within their jurisdiction. The Spatial Development Framework (SDF) addresses the scale or urban growth through planned extensions and redevelopment strategies. The local municipality is aware of the need to integrate urban settlements, with a view to reduce travel distances to the areas of employment opportunities. It also addresses measures to promote compact and connected growth opportunities, such as the identification of revitalisation zones, densification and mixed land use zones. For any development to be sustainable and viable, land development and planning should ensure that communities are located close to job opportunities, social facilities and basic services.

There is a definite need for the residents to have reasonable access to opportunities and facilities that supports living in the urban Settlement. It is the responsibility of the local municipality to ensure that the residents have reasonable access to community services and amenities, as well as employment opportunities and that the form of land development need to provide for basic needs in an affordable way. The proposed development will be in line with this principle by ensuring that people living in the area do in fact have reasonable access to opportunities and facilities.

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.

7.2.2. 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.

Three factors govern the significance of household fuel-burning emissions:

(i) the low level of emissions (that is, their height above the ground is generally about 3 m, within people's breathing zone);
(ii) the simultaneous occurrence of peak emissions (during the coldest months of winter and in the early mornings and throughout the evenings) and poor atmospheric dispersion (stable atmosphere with low wind speeds, with the possible development of temperature inversions); and
(iii) the release of such emissions within high human exposure areas, given that such emissions generally occur in dense, low-income settlements where population density is high (in addition, the pollution is not only outdoors, but frequently indoors as well, due to poor ventilation, so it affects the whole family).

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).

Given the high volumes of pollutants emitted from fuel-burning within the industrial and power-generation sectors, their contribution to ambient concentrations and public health risks is often lower than might be expected. This is because these sources are generally characterized by constant releases, relatively high above ground level, and further away from residential settlements than are household fuel-burning and vehicle emissions.

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.

Many low-cost housing developments and informal settlements are located close to industrial and mining operations, as such land is both available and inexpensive. Poorer communities are more likely to suffer from poor service delivery, including inadequate waste removal that sometimes results in refuse being set alight illegally. These examples show that poverty alleviation could help to improve air quality by enabling people to choose practices that are friendlier to the environment."

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).

7.2.3. 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 undue noise during the operational phase.

7.2.4. 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 sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the physical assessment. If any sites did exist here in the past it would have been largely disturbed or destroyed by past historical and recent urban & housing related development activities in the study and larger area around it.

A section of the study and development area has already been developed and impacted by construction (housing & related) activities. Although sections of the area is still open no sites or material of cultural heritage origin were identified here as well.

Earlier aerial views of the specific study area shows that in 2001 it was still fairly open and undeveloped, but by 2017 large-scale ground clearance had commenced and the surrounding areas had been impacted as well by growing urban housing & other developments. It is therefore believed that if any sites, features or material of archaeological or historical nature did exist here in the past it would have been extensively disturbed or destroyed as result.

7.2.5. AESTHETICS

Aesthetics have very little influence as the area is already highly disturbed. 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 site to a residential area. The visual intrusion is considered to be low as the minimal change and blends in well with the surroundings.

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

8. ENVIRONMENTAL IMPACT ASSESSMENT

8.1 ASSESSMENT CRITERIA

Impacts were rated using the following methodology:

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)
	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

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
	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.

8.2 IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Mixed land 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	5,6638 hectares of indigenous vegetation will be eradicated in order to establish the development. Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. This is one of the first secured residential estate of its kind in Mafikeng.	Duration	Long term	Obtain the necessary environmental authorization for the development. Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		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

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
		Risk	Medium		Medium
	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. 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
	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. There should be 1 chemical toilet for every 30 workers on site.	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 the 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 ensure that should any finds in terms of Palaeontological or Cultural	Duration	Short term	Should any chance finds occur, to immediately contact the SAHRA/Palaeontological specialist.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	Heritage occur necessary steps be taken	Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		High
	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. Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		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.	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	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Probable		Probable
		Significance	Medium		Medium
		Reversibility	High		High

ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
		Risk	Low	the relevant legislation regarding the above-mentioned act as well as with regard to the environment (acts, regulations, and special guidelines).	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
		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
	Loss of indigenous vegetation. Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood.	Extent	Local	No mitigation measures possible.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Low		Low

	ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)				
	ALTERNATIVE 2: Single land use: Housing only				
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	DIRECT IMPACTS:				
Geographical Physical Social Economic	5,6638 hectares of indigenous vegetation will be eradicated in order to establish the development.	Duration	Long term	Obtain the necessary environmental authorization for the development. Conduct a Fauna and Flora Habitat survey to determine the sensitivity of the area. Implement the mitigation measures as described in the Environmental Management Plan.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	High		High
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	Low		Low
		Risk	Low		Medium
	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 erosion and dust pollution. Prepare method statements to this effect.	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
	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 the Geotechnical Engineer must be incorporated into the design of the project.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Low		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium

	ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)				
	ALTERNATIVE 2: Single land use: Housing only				
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				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. The findings of the 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.	
	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 ensure that should any finds in terms of Palaeontological or Cultural Heritage occur necessary steps be taken	Duration	Short term	Should any chance finds occur, to immediately contact the SAHRA/Palaeontological specialist.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		High
	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. Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		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	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.	Local
		Magnitude (Intensity)	Low		Low
		Probability	Probable		Probable

	ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)				
	ALTERNATIVE 2: Single land use: Housing only				
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	lubricants / oils that can take place on bare soil.	Significance	Medium	Ensure that all construction vehicles are in good working order and not leaking oil and or fuel.	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
		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
		Extent	Local		Local

	ENVIRONMENTAL IMPACT ASSESSMENT (Planning and design phase)				
	ALTERNATIVE 2: Single land use: Housing only				
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	Plan for the increase in traffic volumes that will result from the proposed development	Magnitude (Intensity)	Medium	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.	Medium
		Probability	Definite		Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Loss of indigenous vegetation.	Extent	Local	No mitigation measures possible.	Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Low		Low

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 indigenous vegetation will be removed.	Duration	Long term	No mitigation measures required.	Long term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	High		High
		Reversibility	Low		Low
		Risk	Low		Low
	Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. For the no-go option the status quo would prevail.	Extent	Local	The formalization of this area into a residential area is welcomed by the community as these activities have stopped 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	Low		High
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	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	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)**
	and regional economy will not take place. This is one of the first secured residential estate of its kind in Mafikeng. Should this option be implemented, this gap in the market will not be addressed.				
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 Magnitude (Intensity) Probability Significance Reversibility Risk	Local Medium Definite High High Medium	Ensure that the development is constructed and operated as planned.	Local Medium Definite High High Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed land 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	5,6638 hectares of indigenous vegetation will be eradicated in order to establish the development.	Duration Extent Magnitude (Intensity) Probability Significance Reversibility Risk	Long term Local High Definite Medium Low Low	Obtain the necessary environmental authorization for the development. Implement the findings of the Fauna and Flora Habitat survey. Implement the mitigation measures as described in the Environmental Management Plan.	Long term Local High Definite Medium Low Medium
	Un-rehabilitated, disturbed surfaces can lead to erosion and dust pollution.	Duration Extent Magnitude (Intensity) Probability Significance Reversibility Risk	Short term Local Low Definite Medium High Low	Start the rehabilitation of disturbed surfaces as soon as possible. Spray bare surfaces with water to prevent dust pollution.	Medium term Local Medium Definite Medium High Medium
	Foreign plant species are likely to invade disturbed areas.	Duration Extent Magnitude (Intensity) Probability	Short term Local Low Definite	Start the extermination of any invasive species as soon as possible and maintain the eradication programme.	Medium term Local Low Definite

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Ensure that should any finds in terms of Cultural Heritage occur necessary steps be taken	Duration	Short term	Should any chance finds occur, to immediately seize work in the area and contact the SAHRA specialist.	Short term
		Extent	Local		Local
		Magnitude (Intensity)	Medium		Medium
		Probability	Definite		Definite
		Significance	Medium		Medium
		Reversibility	High		High
		Risk	Low		Medium
	Poorly planned ablution facilities for construction workers may cause 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
	The proposed project can impact on the soil and geology.	Duration	Long term	Implement the findings of the Geo-Technical Engineer. 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 they can either collapse on people or on equipment and people- especially small children, can fall into them.	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: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
				Ensure that open trenches are demarcated as required by the Occupational Health and Safety Act.	
Indirect impacts:					
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
		Extent	Local		Local

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	Non-compliance to the relevant legislation may cause social and environmental problems.	Magnitude (Intensity)	Medium	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).	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
		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. 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
	<u>Solid waste</u>: The proposed development will add additional solid waste into the existing waste stream of the Local Municipality. <u>Sewage</u>: The proposed development will add additional sewage into the existing sewage stream of the Local Municipality. <u>Water supply</u>: The proposed development will add pressure to the water supply of the 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
	<u>Traffic:</u> The proposed development will result in an increase in traffic in the	Extent	Local	Ensure that the development is constructed as planned	Local
		Magnitude (Intensity)	Medium		Medium

ENVIRONMENTAL IMPACT ASSESSMENT (Construction phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Potential impacts and risks**	**Assessment criteria**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
	immediate surroundings of the proposed development.	Probability	Definite	by the Town and Regional Planner	Definite
		Significance	Medium		High
		Reversibility	Low		Low
		Risk	Medium		Medium
	Indigenous 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	Low		Low

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
DIRECT IMPACTS:					
Geographical Physical Social Economic Cultural	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
		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

ENVIRONMENTAL IMPACT ASSESSMENT (Operational Phase)					
ALTERNATIVE 1: Mixed land use township (Preferred Alternative)					
Environmental Attribute	**Environmental Attribute**	**Environmental Attribute**	**Assessment rating (With mitigation)**	**Proposed mitigation**	**Assessment rating (Without mitigation)**
		Reversibility	High		High
		Risk	Medium		Medium

9. PUBLIC PARTICIPATION

Public participation plan

Details of the public participation process proposed for the application as required by Regulation 41(2) of GN R. 326, dated April 2017 read with the directions regarding measures to address, prevent and combat the spread of COVID-19 relating to National Environmental Management permits and licences as published in GN R 650 dated 05 June 2020 (Issued in terms of the Directions set out in the Schedule in terms of regulation 4(10) of the Regulations issued by the Minister of Cooperative Governance and Traditional Affairs in terms of section 27(2) of the Disaster Management Act, 2002 (Act No. 57 of 2002) and published on 29 April 2020 in Government Notice No. R. 480 of Government Gazette No. 43258.)

Public participation plan brief & purpose

The aim of this public participation plan is to provide our workforce with the measures we will be actively taking to mitigate the spread of the corona virus. As employee of AB Enviro Consult you are

instructed to follow all these rules diligently in order to sustain a healthy and safe workplace. It's important that we all respond responsibly and transparently to these health precautions.

Scope
This public participation plan applies to all employees and sub-consultants of AB Enviro Consult. It is everybody's responsibility to read through this action plan and to ensure that we collectively and uniformly respond to this challenge

Purpose of the public participation
40. (1) The public participation process to which the—

(a) Environmental Impact assessment report and EMPr, submitted in terms of regulation 19;

was subjected to must give all potential or registered interested and affected parties, including the competent authority, a period of at least 30 days to submit comments on the Environmental Impact assessment report and EMPr.

(2) The public participation process must provide access to all information that reasonably has or may have the potential to influence any decision with regard to an application unless access to that information is protected by law and must include consultation with—

(a) the competent authority;
(b) every State department that administers a law relating to a matter affecting the environment relevant to an application for an environmental authorisation;
(c) all organs of state which have jurisdiction in respect of the activity to which the application relates; and
(d) all potential, or, where relevant, registered interested and affected parties.

(3) Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in subregulation (1) prior to submission of an application but must be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority.

The aim of this process is to provide interested and/or affected parties (I&AP) with background information on the proposed development and is an invitation to identified I&AP's to participate in the Environmental Impact Assessment (EIA) Process to
identify possible impacts and alternatives and to provide them with an opportunity to contribute towards the compilation of the Environmental Management Programme (EMP) for the project.

Identification of I&AP's will be fundamental to the success of the development.

Public Participation process
41. (1) This regulation only applies in instances where adherence to the provisions of this regulation is specifically required.

DETAILS OF PUBLIC PARTICIPATION PROCESS	ACTIONS TO BE TAKEN IN ORDER TO PREVENT THE SPREAD OF COVID-19
(2) The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by	<u>Protocol for public participation</u> ➢ Face masks must be worn at all times. ➢ Only two persons will be allowed to travel in a vehicle at one time. ➢ During the public participation avoid contact with other people as far as possible. Should you have to talk to someone ensure that you stand at least 2 meters away from that person. ➢ Wash your hands after using the toilet, before eating, and if you cough/sneeze into your hands (follow the 20-second hand-washing rule). You can also use the sanitizers that have been provided in each vehicle. ➢ Cough/sneeze into your sleeve, preferably into your elbow. If you use a tissue, discard it properly and clean/sanitize your hands immediately. ➢ Avoid touching your face, particularly eyes, nose, and mouth with your hands to prevent from getting infected. ➢ Upon your return, sanitize everything that you take out of the vehicle. This includes your laptop, cell phone, car keys and face mask

DETAILS OF PUBLIC PARTICIPATION PROCESS	ACTIONS TO BE TAKEN IN ORDER TO PREVENT THE SPREAD OF COVID-19
(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of— (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site;	➢ The notice board will be sterilized with an alcohol based spray at the office before it is loaded into the vehicle. ➢ At the site, ensure that the person fixing the site notice is wearing all relevant PPE before exiting the vehicle. This will include a facemask and disposable cloves. ➢ Ensure that no members of the public are within two meters from you and then fix the notice board at the boundary of the site. ➢ Continue to ensure that you adhere to social distancing at all times. ➢ Once the notice board is fixed, spray the notice board with the alcohol based disinfectant that has been provided in the vehicle. ➢ Once you return to the vehicle, take off the disposable cloves and place them in the container provided. Spray your hands, the hammer and the pair of plyers with the alcohol based hand sanitizer provided.

DETAILS OF PUBLIC PARTICIPATION PROCESS	ACTIONS TO BE TAKEN IN ORDER TO PREVENT THE SPREAD OF COVID-19
(b) giving written notice, in any of the manners provided for in section 47D of the Act, to— (i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;	➢ The notices will be sterilized with an alcohol based spray at the office before it is loaded into the vehicle. ➢ Written notifications will be hand delivered to the occupiers of the site and occupiers of land adjacent to the site. This will be done by placing a copy of the notice in their letter boxes or at a conspicuous place in their fence or at their house. ➢ The person delivering the notices must be wearing all relevant PPE before exiting the vehicle. This will include a facemask and disposable cloves. ➢ Ensure that you adhere to social distancing at all times. ➢ Once you return to the vehicle, take off the disposable cloves and place them in the container provided. Spray your hands with the alcohol based hand sanitizer provided.
(iii) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area; (iv) the municipality which has jurisdiction in the area; (v) any organ of state having jurisdiction in respect of any aspect of the activity; and (vi) any other party as required by the competent authority	➢ Notifications will be sent via registered mail to all of the I&AP's in this section. ➢ Where an e-mail address can be obtained for an I&AP, the notification will rather be sent via e-mail. The following I&AP's have been identified: 1. Department of Agriculture: North West Provincial Department 2. Department of Biodiversity and conservation: North west provincial Department 3. Ngaka Modiri Molema District Municipality 4. Mahikeng Local Municipality 5. Councilor of Municipal ward no 7 6. Department of Water and Sanitation

DETAILS OF PUBLIC PARTICIPATION PROCESS	ACTIONS TO BE TAKEN IN ORDER TO PREVENT THE SPREAD OF COVID-19
(c) placing an advertisement in (i) one local newspaper; or (ii) any official that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations; (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official referred to in paragraph (c)(ii); and	➢ A Newspaper advert will be placed in the Mahikeng Mail ➢ The placement of the advert and the payment of the placement will be done electronically. ➢ An electronic copy of the newspaper will also be requested from the publisher.
(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to— (i) illiteracy; (ii) disability; or (iii) any other disadvantage.	➢ All correspondence will be in English. Should any one request notification in any other language, an interpreter will be appointed to translate the information to this individual.

DETAILS OF PUBLIC PARTICIPATION PROCESS	ACTIONS TO BE TAKEN IN ORDER TO PREVENT THE SPREAD OF COVID-19
(3) A notice, notice board or advertisement referred to in subregulation (2) must— (a) give details of the application or proposed application which is subjected to public participation; and (b) state— (i) whether basic assessment or S&EIR procedures are being applied to the application; (ii) the nature and location of the activity to which the application relates; (iii) where further information on the application or proposed application can be obtained; and (iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made	➢ The relevant information will be included in the notices. ➢ The registered I&AP will be requested to submit their response in writing and electronically to our offices. ➢ Public participation meetings will be avoided as far as possible. ➢ If a public participation meeting is to be held, only 50 people will be allowed in the venue at one time. Their temperatures will be taken and a basic screening will be held at the entrance. The wearing of masks will be compulsory as well as maintaining social distancing.
(4) A notice board referred to in subregulation (2) must— (a) be of a size of at least 60cm by 42cm; and (b) display the required information in lettering and in a format as may be determined by the competent authority.	➢ The notice board will comply with these dimensions and the relevant information will be contained in this notice.

DETAILS OF PUBLIC PARTICIPATION PROCESS	ACTIONS TO BE TAKEN IN ORDER TO PREVENT THE SPREAD OF COVID-19
(5) Where public participation is conducted in terms of this regulation for an application or proposed application, subregulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that (a) such process has been preceded by a public participation process which included compliance with subregulation (2)(a), (b), (c) and (d); and (b) written notice is given to registered interested and affected parties regarding where the— (i) revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b); (ii) revised environmental impact assessment report or EMPr as contemplated in regulation 23(1)(b); or (iii) environmental impact assessment report and EMPr as contemplated in regulation 21(2)(d); may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due.	➢ Written notices will be given to I&AP's electronically as far as possible. ➢ Copies of reports and specialist reports will be made available in the form of a DropBox link that will be sent to them. ➢ Their responses will also be requested to be electronically.
(6) When complying with this regulation, the person conducting the public participation process must ensure that— (a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and (b) participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.	➢ Once again, all efforts will be made to ensure that registered I&AP's are afforded an opportunity to comment on all relevant documentation electronically. ➢ DropBox links will contain all the relevant information. ➢ No hard copies will be left at libraries. If a registered I&AP does not have access to an electronic medium or the internet, they will be supplied with a hard copy of the documents. (Protocols as described above will be followed in order to hand deliver the document)

DETAILS OF PUBLIC PARTICIPATION PROCESS	ACTIONS TO BE TAKEN IN ORDER TO PREVENT THE SPREAD OF COVID-19
(7) Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.	➢ Should this process be needed, the agreement between authorities will be conducted electronically.
Register of interested and affected parties **42**. A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of— (a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP; (b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and (c) all organs of state which have jurisdiction in respect of the activity to which the application relates.	➢ This will be done as far as possible electronically.

DETAILS OF PUBLIC PARTICIPATION PROCESS	ACTIONS TO BE TAKEN IN ORDER TO PREVENT THE SPREAD OF COVID-19
Registered interested and affected parties entitled to comment on reports and plans **43.** (1) A registered interested and affected party is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application. (2) In order to give effect to section 24O of the Act, any State department that administers a law relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days.	➢ Once again, all efforts will be made to ensure that registered I&AP's are afforded an opportunity to comment on all relevant documentation electronically. ➢ DropBox links will contain all the relevant information. ➢ No hard copies will be left at libraries. If a registered I&AP does not have access to an electronic medium or the internet, they will be supplied with a hard copy of the documents. (Protocols as described above will be followed in order to hand deliver the document)
Comments of interested and affected parties to be recorded in reports and plans 44. (1) The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations. (2) Where a person desires but is unable to access written comments as contemplated in subregulation (1) due to— (a) a lack of skills to read or write; (b) disability; or (c) any other disadvantage; reasonable alternative methods of recording comments must be provided for	➢ All comments will be recorded electronically and will be included in the reports. ➢ All correspondence will be in English. Should any one request notification in any other language, an interpreter will be appointed to translate the information to this individual. ➢ If a person is not able to comment due to one of the listed scenarios, a meeting will be held with this individual and his or her comments will be recorded manually. ➢ The same protocol that has been described above for a public participation meeting will be followed in this instance.

9.1 Advertisement and Notice

Publication name	Mahikeng Mail	
Date published	15/04/2021	
Site notice 1 position **Site notice 2 position**	Latitude	Longitude
Date placed	15/04/2021	

PLEASE SEE PROOF BELOW (TO FOLLOW)

PROOF OF SITE NOTICE AFFIXED IN LINE WITH COVID-19 PROTOCOL: PROTECTIVE GEAR AND SANITIZATION IN PLACE: 15/4/2021 (SEE BELOW)

.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	Neighbour	See photo evidence

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 PULIC PARTICIPATION SANITATION:

9.3 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. TP NTili**	(018) 384 3270	(053) 831 4534		**Cnr Dr. James Moroka Drive and Sekame Road Mega City Complex Unit 99 Sekame Street MMABATHO 2735**
Head of Department: North-West Department of Agriculture and Rural Development	**Dr. P. Mokaila**	(018) 389 5146/5104	(018) 392 4377		**Department Agriculture and Rural Development 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**
Ngaka Modiri Molema District Municipality	**The District Municipal Manager**	018 381 9400	018 381 0561		**Private Bag X2167, Mahikeng, 2745**
Mahikeng Local Muncipality	**The Municipal Manager**	018 389 0111	018 384 4830		**Private Bag X63, Mmabatho, 2735**
Ward 7, Mahikeng Local Muncipality	**The Councilor**	018 389 0111	018 384 4830		**Private Bag X63, Mmabatho, 2735**
Eskom	**Mr. Dala**	078 795 1188		dalaME@eskom.co.za	
SAHRA				SAHRIS	

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
jp@abenviro.co.za

15/04/2021

Mr. TP NTili
Department of Water and Sanitation
Cnr Dr. James Moroka Drive and Sekame Road
Mega City Complex
Unit 99 Sekame Street
MMABATHO
2735

Tel: (018) 384 3270

Dear Sir/Madam

The Legalization of the unlawful clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province

AB ENVIRO CONSULT was appointed by **Acetech Infra Pty Ltd** to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development.

Please find enclosed an copy of the Section 24G report. We must receive your comments by no later than the 30 days from the date of this notice. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
jp@abenviro.co.za

15/04/2021

North West Department: Department of Agriculture and Rural Development
The HOD Agriculture
Private Bag X2039
Mmabatho
2735

Dear Sir/Madam

The Legalization of the unlawful clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province

AB ENVIRO CONSULT was appointed by **Acetech Infra Pty Ltd** to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development.

Please find enclosed an electronic copy of the Section 24G report. We must receive your comments by no later than the 30 days from the date of this notice. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA)

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
jp@abenviro.co.za

15/04/2021

North West Department: Department of Biodiversity
Head of Department
Private Bag X2039
Mmabatho
2735

Dear Sir/Madam

The Legalization of the unlawful clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province

AB ENVIRO CONSULT was appointed by **Acetech Infra Pty Ltd** to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development.

Please find enclosed an electronic copy of the Section 24G report. We must receive your comments by no later than the 30 days from the date of this notice. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA)

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
jp@abenviro.co.za

15/04/2021

The Municipal Manager
Ngaka Modiri Molema District Municipality
Private Bag X2167
Mahikeng
2745

Dear Sir/Madam

The Legalization of the unlawful clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province

AB ENVIRO CONSULT was appointed by **Acetech Infra Pty Ltd** to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development.

Please find enclosed an electronic copy of the Section 24G report. We must receive your comments by no later than the 30 days from the date of this notice. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA)

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
jp@abenviro.co.za

15/04/2021

The Municipal Manager
Mahikeng Local Municipality
Private bag X63,
Mmabatho
2735

Dear Sir/Madam

The Legalization of the unlawful clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province

AB ENVIRO CONSULT was appointed by **Acetech Infra Pty Ltd** to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development.

Please find enclosed an electronic copy of the Section 24G report. We must receive your comments by no later than the 30 days from the date of this notice. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
jp@abenviro.co.za

15/04/2021

The Councillor Ward 7
Mahikeng Local Municipality
Private bag X63,
Mmabatho
2735

Dear Sir/Madam

The Legalization of the unlawful clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province

AB ENVIRO CONSULT was appointed by **Acetech Infra Pty Ltd** to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development.

Please find enclosed an electronic copy of the Section 24G report. We must receive your comments by no later than the 30 days from the date of this notice. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA)

AB ENVIRO-CONSULT CC

Reg no. 2000/016653/23

7 Louis Leipoldt Street,
Potchefstroom, 2531
Fax: + 27 (18) 293 0671
Cell: + 27 (83) 5488 105
jp@abenviro.co.za

15/04/2021

Mr. M. Dala
Eskom
DalaME@eskom.co.za

Dear Sir/Madam

The Legalization of the unlawful clearance of 5.6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province

AB ENVIRO CONSULT was appointed by **Acetech Infra Pty Ltd** to submit an application to the North West Department Economic Development, Environment, Conservation and Tourism for the above mentioned proposed development.

Please find enclosed an electronic copy of the Section 24G report. We must receive your comments by no later than the 30 days from the date of this notice. In the event of your organisation/department not wishing to comment on this matter, it would be appreciated if we could receive written confirmation thereof to enable us to continue with the finalisation of the application.

If no response is however received from your Department/organisation within the said time, it will be assumed that your department/organisation does not wish to comment on this matter and the application will be processed further.

Please do not hesitate to contact us should any further information or clarification be required.

Yours sincerely,

PROF. A.B. DE VILLIERS

PROF A B DE VILLIERS (M Sc, Ph D, SACNASP)
MR.J.P. DE VILLIERS (M Sc, HED, EAP-EAPASA); MRS.J.E. DU PLOOY (M.E.M; EAP-EAPASA)

9.4 ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
To follow	To Follow

9.5 COMMENTS AND RESPONSE REPORT

I&AP registered:	Comment received:	Response by the EAP:
To Follow	To follow	To follow

10 Environmental Management Programme

10.1 INTRODUCTION

The purpose of this Environmental Management Programme (EMPr) is to ensure 'good environmental practice' by taking a holistic approach to the management of environmental impacts during the construction and operation of the the clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province. This EMPr therefore sets out the methods by which proper environmental controls are to be implemented by the applicant and his nominated contractor. However, where necessary, these methods have been expanded upon and additional issues addressed in order to ensure that all environmental aspects are appropriately considered and monitored.

It is important to note that this EMPr is focused primarily on the construction and operational phases of the project. Due to the projected lifespan, a detailed Site Closure and Decommissioning has not been included in this document as it is not intended for a project of this nature. Design specifications from an environmental point of view were taken into consideration, the Environmental Assessment Practitioner (EAP) have provided input with regard to possible mitigation measures for reducing environmental impacts.

This EMPr is also intended to ensure that the principles of sound Environmental Management and the general "Duty of Care" specified in the National Environmental Management Act are promoted on site during all phases of the development

This EMPr has been designed to suit the particular activities and needs of the construction and operation of the proposed township establishment to be known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province, and incorporates specific project mitigation measures. This EMPr therefore identifies the following:

- Construction and operation activities that will impact on the environment;
- Specifications with which the contractor shall comply in order to protect the environment from the identified impacts; and
- Actions that shall be taken in the event of non-compliance.

It is important to note that the EMPr is a dynamic document subject to similar influences and changes as are brought by variations to the provisions of the project specification. Any substantial changes shall be submitted to the contractor, resident engineer and relevant environmental authorities in writing for approval.

A professional team consisting of the following experts have been assembled in order to ensure the success of the proposed development:

- A Geotechnical Engineer
- A Town and Regional Planner
- The Civil Engineer
- A SAHRA Specialist.
- A Ecological Fauna and Flora specialist

- Registered Environmental Assessment Practitioner (EAP)

They were responsible for the following actions:

- A Geotechnical Engineer had 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 Engineer and that the layout satisfies the needs of future occupiers of the site
- The Civil Engineer had to determine the capability of existing infrastructure to be linked to proposed development and readily available bulk services. He also designed the proposed infrastructure.
- SAHRA Specialist determined the possible impact of the development on Archaeological and cultural features.
- The Ecological Fauna and Flora specialist determined the impact of the proposed development on the streams and the Fauna and Flora of the area
- The EAP must assess all possible environmental issues that may affect the proposed project and ensure that all interested and affected parties are notified in order to assist him in identifying possible impacts. He must also give mitigation measures where applicable.
- It will be essential to plan for the appointment of an Environmental Control Officer (ECO) who will be responsible to ensure that all aspects regarding the environmental issues are implemented and monitored. The ECO will also be responsible for maintaining a database of all records pertaining to the environment for the study area.
- The surveyor ensured that the cadastral information is accurate, up to date and properly mapped. The contours of the area are accurately plotted.

10.2. Contents of the Environmental Management Programme

The contents of an EMPr, shown below, are contained in Appendix 4 of the NEMA EIA Regulations 982 of 2014 as amended and published in Appendix 4 of Government Notice No. R 326 of 2017.

1. (1) An EMPr must comply with section 24N of the Act and include-

(a) details of

(i) the EAP who prepared the EMPr; and
(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;

(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project descr

(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastruct the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, in buffers;

(d) a description of the impact management outcomes, including management statements, identifying the impacts an that need to be avoided, managed and mitigated as identified through the environmental impact assessment pr for all phases of the development including-

(i) planning and design;

(ii) pre-construction activities;
(iii) construction activities;
(iv) rehabilitation of the environment after construction and where applicable post closure; and
(v) where relevant, operation activities;

(f) a description of proposed impact management actions, identifying the manner in which the impact management ou
and outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to

(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmenta
degradation;
(ii) comply with any prescribed environmental management standards or practices;
(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;

(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);

(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);

(i) an indication of the persons who will be responsible for the implementation of the impact management actions;

(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented

(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);

(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;

(m) an environmental awareness plan describing the manner in which-
(i) the applicant intends to inform his or her employees of any environmental risk which may result from their wo
(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and

(n) any specific information that may be required by the competent authority.

10.3. Details of Environmental Assessment Practitioner

Project Environmental Assessment Practitioner:	Mr J. P. de Villiers of AB Enviro Consult cc		
Company/ Closed Corporation Registered Name (if applicable)	AB Enviro Consult CC		
Company / Closed Corporation Registration Number (if applicable)	2000/016653/23		
Contact Person:	Mr. JP de Villiers		
Position in Company:	Environmental Assessment Practitioner (EAP)		
ID Number of Contact Person	700228 5035 084		
Postal Address:	7 Louis Leipoldt Street		
	Potchefstroom	**Code:**	2531
Physical Address:	7 Louis Leipoldt Street		

	Potchefstroom	**Code:**	2571
Telephone No:	018 294 5005	**Cell:**	082 5642 642
E-mail address:	jp@abenviro.co.za	**Fax:**	018 293 0671

10.4 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

Over a period of 25 years (1996-2021) 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

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

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MR J.P. DE VILLIERS

YEAR	Qualification	Institution	Field of Study
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

YEAR	Qualification/ Registration	Institution	Field of Study
2008	Basic Principles of Ecological Rehabilitation and Mine Closure	Centre for Environmental Management (North West University)	Ecological Rehabilitation
2019	EAPASA	Registered EAP	EAPASA 2019/808

ACADEMIC AND PROFESSIONAL QUALIFICATIONS MRS J.E. DU PLOOY

YEAR	Qualification	Institution	Field of Study
1999	BA	PU FOR CHE	Geography, Tourism
2000	BA (Honns) Cum Laude	PU FOR CHE	Geography
2002	Master's degree: 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

YEAR	Qualification/ Registration	Institution
2020	Registered Environmental Assessment Practitioner 2019/1573	Environmental Assessment Practitioners of South Africa

10.5. DESCRIPTION OF THE ACTIVITY

The development entails the clearance of 5,6638 hectares of indigenous vegetation in order to establish the secured residential estate known as Melrose Estates situated on Erf 6439, Golf View, Mahikeng, Mahikeng Local Municipality, North West Province. See Figure 1 for a copy of the layout plan for phase 2. The development is undertaken into four phases which are:

- Phase one (1) consists of the construction of 37 double story residential housing units covering an area of extent of 2.8 hectares and a club house or health center (See Photograph 1);
- Phase two (2) involve the construction of single story residential houses covering an area of extent of 1.1 hectares (See Photograph 2);
- While phase three (3) and four (4) will be consisting of 45 to 50 flats and shopping complex

Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. The formalization of this area into a residential area is welcomed by the community as these activities have stopped.

This is one of the first secured residential estate of its kind in Mafikeng. The only other one is Leopard Park which was done probably 30 years ago and it only offers stands for sale where the clients must build their own houses costing anywhere between 2.5mil-4mil. The development will be offering housing options within a varied price range. The development provides clients with a turnkey housing option within the secured environment.

Figure 1: Phase 2 layout plan

Photograph 1: Double story houses were constructed as part of phase one (1).

Photograph 2: Phase two (2) involve the construction of single story residential houses

10.6. DESCRIPTION OF THE PROPERTY

The development is located approximately 1km east of the city centre of Mahikeng in an area known as Golf View on Erf 6439, Golf View, Mahikeng. The site falls in an area under the jurisdiction of the Mahikeng Local Municipality and the Ngaka Modiri Molema District Municipality within the North West Province. The development is bounded by Quigley Street (to the west), Tillard Street (to the north) and Gemsbok Street (to the east) and an existing urban housing development (to the south). The topography of the study area is relatively flat and open, with no rocky ridges or outcrops present.

Figure 2 (1:50 000 Topographical map of the area) and Figure 3 (Google Map Image of the area (Yellow polygon indicating the Golf Course and in relation to the site that is represented with a red polygon)) clearly illustrates that the site has been used as a Golf Course in the past and as such was zoned as a

Park erf. The whole erf on which the Golf Course was situated was called Erf 1645 and the Erf on which our development took place was called Erf 6439.

On 25 November 2005 the Mafikeng Local Municipality wrote a letter to the Surveyor-General informing him that Erf 6439 being a Portion of the Remainder of Erf 1645 was subdivided into 89 erven with erf numbers 9142 to 9231 allocated to it. This letter also notified the Surveyor-General that *"…in terms of Section 137 of the Municipal Ordinance No. 20 of 1974 that Erf 6439, a portion of Erf 1645 (Park), Mafikeng Extension 18, as indicated on the attached Sketch Plan, having been properly effected in accordance with the provision of the Ordinance and as approved by Council, has been* ***permanently closed and zoned for residential purposes****."*

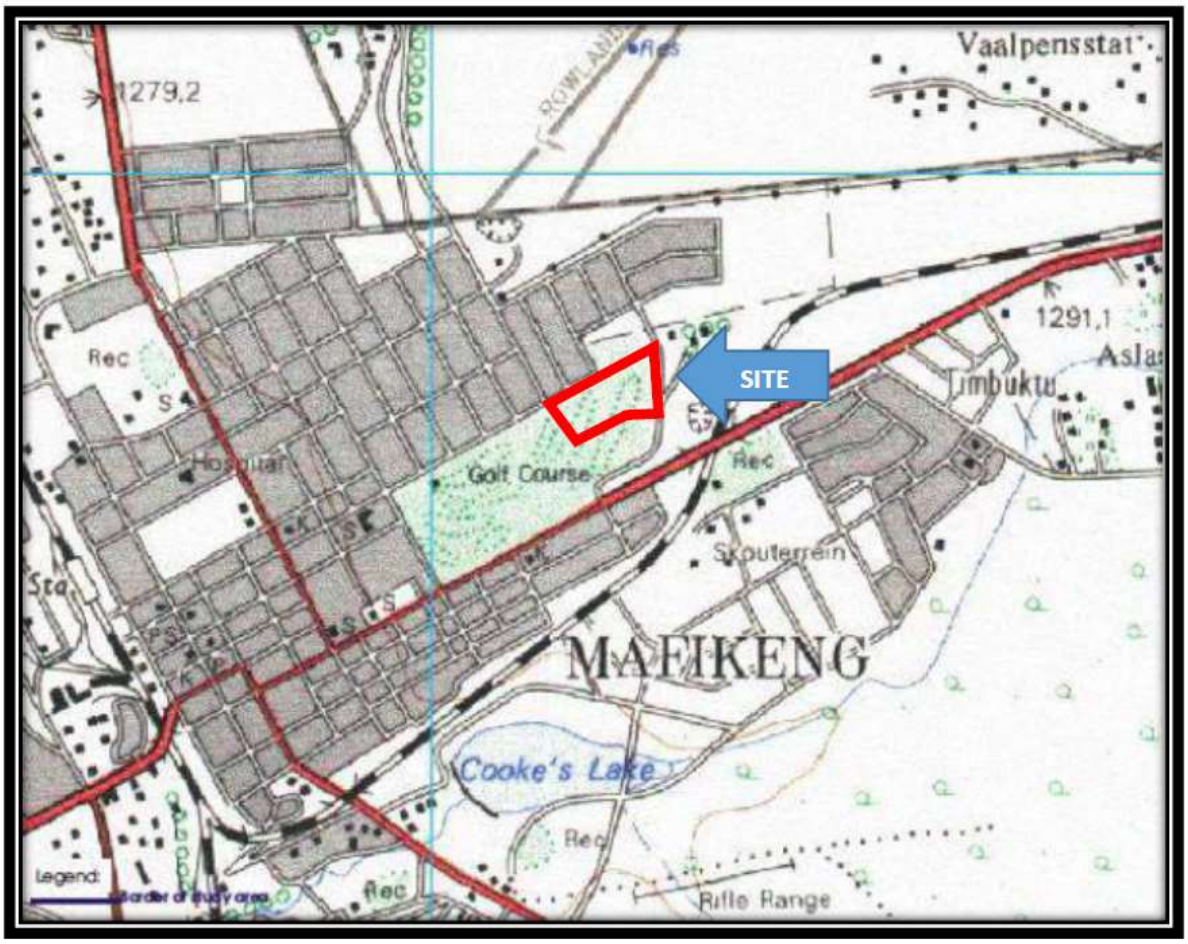


Figure 2: 1:50 000 Topographical map of the area

Figure 3: Google Map Image of the area (Yellow polygon Indicating the Golf Course and in relation to the site that is represented with a red polygon))

Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. Photograph 3 is an illustration of remnants of illegal dumping that took place on site. The site is surrounded by urban development. See Photograph 4 and 5.

Photograph 3. Illegal dumping that took place on site

Photograph 4. The site is surrounded by urban development

Photograph 5. View of part of the site (in the foreground) and adjacent urban area (in the background).

Vegetation is transformed at areas where buildings have been constructed. Remaining vegetation appears to be modified and degraded. Threatened animal and plant species, or any other animal or plant species of particular conservation concern appear to be absent at the site. Site is isolated mostly by urban surroundings and the scope for the site to be a corridor of particular conservation importance is small. The scope for the vegetation at the site to be restored and conserved is small. Ecological sensitivity at the remaining vegetation at the site is low. Based on the present survey of adjacent areas and the

remaining vegetation, the ecological sensitivity of the area where buildings have recently been constructed would probably have been low as well.

Registered Land Owner:	Acetech Infra Pty Ltd		
Contact Person:	Ms. S. Mehta		
Postal Address:	6 Baden Powell Avenue, Golf View		
	Mahikeng	**Code:**	2745
Physical Address of Land Owner:	6 Baden Powell, Golf View		
	Mahikeng	**Code:**	2745
Telephone No:	082 902 7074	**Cell:**	071 078 0162
E-mail address:	info@melroseestates.co.za	**Fax:**	018 293 0671

Site Co-ordinates

The co-ordinates should be in degrees, minutes and seconds using the Hartebeeshoek94 WGS84 co-ordinate system.

Latitude (S):			**Longitude (E):**		
26°	58'	01.39"	24°	42'	48.54"

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

10.7.1 BIO-PHYSICAL ASPECTS

10.7.1.1 GEOLOGY AND SOIL

The site is underlain by basaltic amygdaloidal lava, agglomerate & tuff of the Allanridge Formation (Ra), and amygdaloidal lava& tuff of the Rietgat Formation (Rr), Platberg Group, of the Ventersdorp Supergroup, and the site is covered by Kalahari sand and calcrete. Surficial deposits include the quaternary aeolian Kalahari sand and limestone, covering the lithology. Consultation of the 1:250 000 Mafikeng geological map indicates at the investigated area is underlined by ferricrete & weathered granite. Naturally this area is covered with the thick layer of silty/colluviums sandy soil and clayey subsoil The sand seems to contain some pinholes which indicate they may be collapsible with the estimation of about 20mm collapsibility. The sandy material is due to the transportation by means of the natural causes e.g. wind and rain. The top sandy soils generally tend to be loose and could easily be excavated and a sample was not taken. The soil profiling conducted during the investigations indicates that the underlain material constitutes of clayey horizons which is characterised by shattering and high expansive potential. The depths of natural material varied from (0.600-2.5), (0.700-2.2) and (0.800-2.2) respectively. During profiling the material showed consistency and constitutes of dark yellowish brown to light yellowish weathered granite and diabase gravelly materials.

The site has been classified into one site class designation zone according to the NHBRC classification; namely site class designation H/H1 defined by clayey horizon.

The foundation option recommended for the said development is raft foundations. Remove unsuitable soil and replace with suitable material and compact to 95 % Mod Ashto dry density. Excavate footings to a depth of 0.8m.Alternatively we recommend strip foundation which will be more economical for the

developer as mentioned above. The findings of geotechnical investigation indicates that the proposed site for development is suitable for the development provided all the guidelines are followed as outlined in the report. Areas of termite and other biotic activity were not visible but however should be done to prevent damage to structures due to differential settlements. The biotic activity is generally limited to the upper soil horizon. Fill should be place layers not exceeding 200mm.

10.7.1.2 TOPOGRAPHY

The site is located on a plain surface dipping slightly from northeast to southwest. The highest elevation occur along the eastern border where a maximum of around 1294 meters is reached. The lowest point in the development occur at the extreme southwest where the elevation is 1290. The maximum elevation difference is approximately 4m over a distance of 450.

A detailed site survey has been carried out to establish levels. The Engineering report and the Layout plan address issues regarding drainage of the site.

10.7.1.3 CLIMATE

The climate of the area is typical of the South African interior. In the discussion of this variable, certain aspects of rainfall, temperature and wind that can influence the project will be highlighted.

It must be noted that the climatic data are recorded in the Department of Environmental Affairs (1988) climatic data records. Data for Mafikeng weather station (0508/261 0) is available. The station has continuous records since 1920.

10.7.1.3.1 Rainfall

The average annual rainfall for the area is 553mm per annum. The highest annual rainfall recorded during the period for which the record is available is 868 mm (1918), while a yearly low of 265mm was recorded in 1930. Of note is the maximum-recorded daily rainfall of 101mm that was recorded on 16/12/1942.

The highest recorded monthly rainfall was recorded during January 1976 namely 360mm. Of importance is the fact that monthly minima of zero rainfall have been recorded for 6 months of the year.

The variability of rainfall as well as the high intensity events will definitely influence the project. On average however, the impact of rainfall can be considered as positive, as sufficient water is generally available for sustaining vegetation. Extreme dry conditions during dry spells will negatively affect the project due to the secondary effects on vegetation as well as the possibility of fire hazards. Extreme maximum events can also have a negative effect on the project during all its phases.

The overall impact can therefore be considered to be “variable” during the construction and operational phases (local in extent and long term in duration). The likelihood that these impacts may occur is probable, medium in intensity and significance. Steps to mitigate negative effects will be described in various sections of the Management Plan.

Due to the scale of the operation, the rainfall of the area cannot be affected by the project and is therefore “Not Applicable”.

10.7.1.3.2 Temperature

The average daily maximum temperature for the winter months for the area is approximately 20º C. The average daily minimum for that time of the year is in the order of 4,5º C.

During the summer months, the average daily maximum is in the order of 29º C and the daily average minimum approximately 16ºC. The highest daily maximum recorded was 40,2ºC while the lowest recorded temperature was -2,5ºC.

In combination with a dry spell, such hot temperatures may be favourable for the spreading of veldfires.

The general impact of this variable on the project can be considered as positive during the construction and operational phases. The impacts can however be considered as having low intensity impacts of low significance. The extent is local and short term in duration.

Due to the scale of the project, it is clear that it will have no impact on the environment".

10.7.1.3.3 Wind

The average wind direction for the area during the summer months is from the north-to-north easterly quadrant, while during the early spring the direction is more north westerly. Southerly winds generally occur during the winter, but are not frequent. Normally very little wind is experienced during the winter due to the presence of the high-pressure cell situated over the country during that time of the year.

The wind speeds are normally fairly low, but high wind speeds may occur during early spring and during of thundershowers.

Wind can be considered as having a low intensity, and a low significance negative impact on the construction and operational phases of the project. The probability is probable and the impacts are local but short in duration. The project can have no influence on the wind and is therefore "not applicable.

10.7.1.3.4 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.

10.7.1.4 SURFACE DRAINAGE, WETLANDS AND RIPERIAN ZONES

The area lies within the drainage basin of the Molopo River. The study area itself is situated on an area drained by overland flow. No streamlines are found on the proposed site for the project. Drainage occurs in a South-westerly direction towards the Molopo River that is situated 1,1 km south of the site.

No wetlands or riparian zones are found on or near the site

No erosion by sheet flow is evident on site. Surface drainage will have an influence on the project on a local scale and long in duration. The influence is positive in the sense that no major ground works are necessary to overcome possible erosion by sheet flow. The intensity and significance is low and of a probable probability.

The project will have a negative influence on the environment during the construction phase as the natural overland flow will be disturbed during this phase. If the prescribed management plan for the operational phase is adhered to, no undue stress will be placed on the environment - a positive impact can be expected. The likelihood of these impacts occurring is probable, but the intensity and significance, are judged low. The extent is local and the duration long

10.7.1.5 GROUND WATER

The permanent or perched water table on site is deeper than 1, 5 m below ground surface. The underground water table in the area is normally deep because of the geology of the area. The likelihood of problems arising from it is not very large if proper steps are taken to prevent possible pollution infiltration into the groundwater.

The impact and significance of this variable is considered low, probable but with a low significance.

The project could adversely affect ground water if proper steps are not implemented in order to prevent pollution from reaching the groundwater. If proper mitigation and pollution prevention steps are taken during the planning, implementation and post-construction phases it is highly unlikely that the groundwater will be affected. The eventual influence should therefore be one of low significance, probability and intensity.

Possible infiltration into the groundwater have been taken into account. During the construction phase, no spills of lubricants or construction worker sewage should be allowed to pollute the ground water. Special care must be taken to ensure adequate surface drainage to prevent the accumulation of water next to structures, especially within these relative flat areas.

10.7.1.6 FLORA

The site is situated at the Grassland Biome which is represented by the Klerksdorp Thornveld vegetation type (Mucina & Rutherford, 2006). A brief overview of the vegetation type, which serves as an outline of the ecological context of the site, follows.

Klerksdorp Thornveld (Gh 13)

Distribution: In South Africa the Klerksdorp Thornveld is present in the North West Province in two sets of patches, one in the Wolmaransstad, Ottosdal and Hartbeesfontein region, and the other from the Botsalano Game Park north of Mafikeng in the vicinity of Madibogo in the south. Altitude for the entire vegetation type is 1260 – 1580 m (Mucina & Rutherford 2006).

Vegetation and landscape features: Plains or slightly irregular undulating plains with open to dense *Acacia karroo* bush clumps in dry grasslands (Mucina & Rutherford 2006). Geology and soils: Shale, slate and quartzite of the Pretoria Group with interlaid diabase sills and Hekpoort lava supporting relatively shallow and rocky soils (Glenrosa and Mispah forms). Equally represented are eutrophic red plinthic soils (Hutton form) derived mainly from a thick succession of volcanics and sediments of the Ventersdorp Supergroup (Mucina & Rutherford 2006).

Climate: Warm-temperate, summer-rainfall region, with overall mean annual precipitation of 533 mm. Summer temperatures are high. Frequent frosts occur in winter (Mucina & Rutherford 2006).

Important taxa of the Klerksdorp Thornveld listed by Mucina & Rutherford (2006): Small Trees: *Acacia karroo, Acacia caffra, Celtis africana, Searsia lancea, Ziziphus mucronata.* Tall Shrubs: *Acacia hebeclada, Diospyros lycioides* subsp. *lycioides, Ehretia rigida, Grewia flava, Gymnosporia buxifolia, Searsia pyroides, Tarchonanthus camphoratus.* Woody Climber: *Asparagus africanus*. Low Shrubs: *Asparagus laricinus, Asparagus suaveolens, Felicia muricata, Anthospermum hispidulum, Anthospermum rigidum* subsp. *pumilum, Aptosimum elongatum, Gnidia capitata, Gomphocarpus fruticosus* subsp. *fruticosus, Helichrysum dregeanum, Leucas capensis, Pavonia burchellii, Pentzia globosa, Solanum supinum* var. *supinum, Triumfetta sonderi, Ziziphus zeyheriana*. Graminoids: *Aristida congesta, Cynodon dactylon, Eragrostis lehmanniana, Eragrostis trichophora, Microcloa caffra, Panicum coloratum, Sporobolus fimbriatus, Themeda triandra, Andropogon shirensis, Anthephora pubescens, Aristida junciformis* subsp. *galpinii, Aristida stipitata* subsp. *graciliflora, Brachiaria nigropedata, Brachiaria serrata, Bulbostylis burchellii, Cymbopogon pospischilii, Digitaria eriantha, Diheteropogon amplectens, Elionurus muticus, Eragrostis curvula, Eragrostis obtusa, Eragrostis racemosa, Eragrostis superba, Eustachys paspaloides, Heteropogon contortus, Setaria sphacelata, Sporobolus africanus, Tragus berteronianus, Trichoneura grandiglumis, Triraphis andropogonoides.* Herbs: *Acalypha angustata, Acanthospermum australe, Berkheya onopordifolia* var. *onopordifolia, Berkheya setifera, Blepharis integrifolia* var. *clarkei, Chamaesyce inaequilatera, Chascanum adenostachyum, Dicoma macrocephala, Helichrysum nudifolium* var. *nudifolium, Hermannia lancifolia, Hibiscus pusillus, Jucticia anagalloides, Lippia scaberima, Nidorella microcephala, Nolletia ciliaris, Pollichia campestris, Rhyncosia adenodes, Salvia radula, Selago densiflora, Teucrium trifidum, Tolpis capensis.* Geophytic Herbs: *Bulbine narcissifolia, Ledebouria marginata, Ornithogalum tenuifolium* subsp. *tenuifolium, Raphionacme hirsuta.* Herbaceous Climber: *Rhynchosia venulosa.*

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

Vegetation at the site appears to be degraded, modified and in some areas where buildings have recently been constructed, transformed. Remaining vegetation has a conspicuous grass layer, some indigenous

herbs, alien invasive weeds and mostly shrub-height *Vachellia tortilis*, *Vachellia karroo* and *Ziziphus mucronata*. Other indigenous woody species that are present are *Searsia pyroides* and *Grewia flava*. The alien invasive tree *Melia azedarach* also occurs at the site. Remains of the alien invasive *Eucalyptus camaldulensis* (Red Gum), a tree species that are widespread in the surrounding area, are found at the site. Indigenous grass species include *Enneapogon cenchroides*, *Eragrostis rigidior*, *Panicum maximum*, *Aristida congesta*, *Cynodon dactylon*, *Eragrostis lehmanianna*, *Chloris virgata*, *Eragrostis superba*, *Heteropogon contortus* and *Tragus berteronianus*. Indigenous forbs and dwarf shrubs include *Gazania krebsiana*, *Bulbine narcissifolia*, *Barleria macrostegia*, *Chamaesyce inaquilatera*, *Felicia muricata*, *Pollichia campestris* and *Nidorella microcephala*. Indigenous climbing herbs such as *Merremia palmata* and *Pentarrhinum insipidum* as well as the alien invasive climbing herb *Ipomoea purpurea* are conspicuous at parts of the site.

Alien invasive weed species are visible at previously cleared and previously cultivated areas. These alien invasive weeds include *Flaveria bidentis*, *Datura ferox*, *Argemone ochroleuca*, *Gomphrena celosioides*, *Schkuhria pinnata*, *Tagetes minuta*, *Conyza bonariensis*, *Verbena aristigera*, *Verbesina encelioides* and *Verbena aristigera*.

Wetlands and rocky ridges appear to be absent at the site.

Grassland at the site is represented by the Klerksdorp Thornveld (Gh 13) which is not listed as a Threatened Ecosystem according to the National List of Threatened Ecosystems (2011).

No Threatened or Near Threatened plant or animal species appear to be resident at the site. No other plant or animal species of particular conservation concern appear to be present at the site.
The scope for the site to be part of a corridor of particular conservation importance is small.
Ecological sensitivity at the site is low. See Figure 6.

Figure 6: Indications of ecological sensitivity at the site.

	Red outline	**Boundaries of the site**
	Light yellow outline and shading	**Low Sensitivity**

Based on the present survey at the site and adjacent areas the ecological sensitivity of the area where the buildings have recently been constructed is likely to have been similar, low. There are no indications that the site where the buildings have recently been constructed would have contained sensitive ecosystems or sensitive species.

Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are moderate or low.

If the development is approved a key issue would be continued monitoring and eradication of alien invasive plant species. It is in particular alien invasive species such as *Melia azedarach* (Syringa) and invasive *Prosopis glandulosa* (Mesquite) which should not be allowed to establish.

If the development is approved an opportunity presents itself to cultivate indigenous plant species which would benefit urban nature conservation.

10.7.1.7 FAUNA

Mammals

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). 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
Chrysospalax villosus Rough-haired golden mole	Vulnerable	No	No
Cloeotis percivali Short-eared Trident Bat	Vulnerable/ Near-threatened	No	No
Diceros bicornis Black rhinoceros	Critically Endangered	No	No
Lycaon pictus African wild dog	Endangered	No	No
Loxodonta africana African elephant	Vulnerable	No	No
Mystromys albicaudatus White-tailed mouse	Endangered	No	No
Neamblysomus julianae Juliana's Golden Mole	Critically Endangered	No	No
Panthera leo Lion	Vulnerable	No	No
Rhinolophus blasii Blasi's Horseshoe Bat	Vulnerable	No	No
Smutsia temminckii Ground Pangolin	Vulnerable	No	No

Near threatened mammal species known to occur in 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 to be found based on habitat assessment
Ceratotherium simum	Near	No	No

White Rhinoceros	threatened

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
Myosorex varius Forest shrew	Uncertain	No	No

Birds

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). 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
Aegypius tracheliotos	**Lappet-faced Vulture**	Vulnerable	No	No
Anthropoides paradiseus	**Blue Crane**	Vulnerable	No	No
Aquila rapax	**Tawny Eagle**	Vulnerable	No	No
Ardeotis kori	**Kori Bustard**	Vulnerable	No	No
Balearica regulorum	**Grey Crowned Crane (Mahem)**	Vulnerable	No	No
Botaurus stellaris	**Eurasian Bittern**	Critically Endangered	No	No
Circus ranivorus	**African Marsh- Harrier**	Vulnerable	No	No
Crex crex	**Corn Crake**	Vulnerable	No	No
Eupodotis senegalensis	**White-bellied Korhaan**	Vulnerable	No	No
Falco naumanni	**Lesser Kestrel**	Vulnerable	No	No
Geronticus calvus	**Southern Bald Ibis**	Vulnerable	No	No
Gorsachius leuconotus	**White-backed Night-heron**	Vulnerable	No	No
Gypaetus barbatus	**Bearded Vulture**	Endangered	No	No

Gyps africanus	**White-backed Vulture**	Vulnerable	No	No
Gyps coprotheres	**Cape Vulture**	Vulnerable	No	No
Pelecanus rufescens	**Pink-backed Pelican**	Vulnerable	No	No
Polemaetus bellicosus	**Martial Eagle**	Vulnerable	No	No
Rhynchops flavirostris	**African Skimmer**	Endangered	No	No
Sagittarius serpentarius	**Secretarybird**	Vulnerable	No	No
Sarothrura ayresi	**White-winged Flufftail**	Critically Endangered	No	No
Tyto capensis	**African Grass-Owl**	Vulnerable	No	No

*** Though some of the above bird species that roams over large areas may ocassionally 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). 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 dependant on the site as breeding area or habitat.

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

Beetles

Beetles of particular conservation priority

Fruit chafer species (Coleoptera: Scarabaeidae: Cetoninae) in the Gauteng Province and North-West Province which are of known high conservation priority.

Species	Threatened Status	Recorded at site during survey	Likely to be resident based on habitat assessment
Ichnestoma stobbiai	Uncertain	No	No
Trichocephala brincki	Uncertain	No	No

Scorpions

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.

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

Reptiles

Reptiles of particular high conservation priority

The following tables list possible presence or absence of threatened reptile or near threatened reptile species in the study area. The Atlas and Red List of Reptiles of South Africa, Lesotho and South Africa (Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers, 2014) has been used as the main source to compile the list for assessment.

Threatened reptile species in North West Province. Main Source: (Bates, Branch, Bauer, Burger, Marais, Alexander & de Villiers, 2014). 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
Crocodylus niloticus Nile Crocodile	Vulnerable	No	No	No

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

Amphibians of particular conservation concern

No frog species that occur in the North West are listed as Threatened species (Vulnerable, Endangered or Critically Endangered) or Near Threatened species according to IUCN Amphibian Specialist Group (2013). Table 4.17 lists *Pyxicephalus adspersus* (Giant Bullfrog) as Least Concern globally. According to the Biodiversity Management Directorate of GDARD (Gauteng Department of Agriculture and Rural Development) (2014) there are no amphibians in Gauteng that qualify for red listed status (red listed here indicates a catecory of special conservation concern such as threatened or near threatened). Suitable habitat for Giant Bullfrog at site appears to be absent.

Near threatened 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
Pyxicephalus adspersus Giant Bullfrog	Near threatened (Currently Least Concern)	No	No	No

Assessment of invertebrate species of particular conservation concern

Butterflies of particular conservation concern

Studies about the vegetation and habitat of threatened butterfly species in South Africa showed that ecosystems with a unique combination of features are selected by these often-localised threatened butterfly species (Deutschländer and Bredenkamp 1999; Edge 2002, 2005; Terblanche, Morgenthal & Cilliers 2003; Lubke, Hoare, Victor & Ketelaar 2003; Edge, Cilliers & Terblanche, 2008). Threatened butterfly species in South Africa can then be regarded as bio-indicators of rare ecosystems.

Four species of butterfly in Gauteng Province and North West Province combined are listed as threatened in the recent butterfly conservation assessment of South Africa (Mecenero *et al*., 2013). The expected

presence or not of these threatened butterfly species as well as species of high conservation priority that are not threatened, at the site sa listed in the following Tables.

Threatened butterfly species in North West Province and Gauteng Province. Sources: Henning, Terblanche & Ball (2009), Mecenero *et al*. (2013). 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 possibility, Unlikely, Highly unlikely
Aloeides dentatis dentatis Roodepoort Copper	**Endangered**	No	Highly unlikely
Chrysoritis aureus Golden Copper	**Endangered**	No	Highly unlikely
Lepidochrysops praeterita Highveld Blue	**Endangered**	No	Highly unlikely
Orachrysops mijburghi Mijburgh's Blue	**Endangered**	No	Highly unlikely

Butterfly species of the North West Province and Gauteng Province that are not threatened and not near threatened but of which are of particular conservation concern and listed in the **Rare** category (Mecenero *et al.*, 2013). 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
Colotis celimene amina Lilac Tip	**Rare (Low density)**	No	Highly unlikely
Lepidochrysops procera Savanna Blue	**Rare (Habitat specialist)**	No	Highly unlikely
Metisella meninx Marsh Sylph	**Rare (Habitat specialist)**	No	Highly unlikely
Platylesches dolomitica Hilltop Hopper	**Rare (low density)**	No	Highly unlikely

Beetles of particular conservation priority

Fruit chafer species (Coleoptera: Scarabaeidae: Cetoninae) in the Gauteng Province and North-West Province which are of known high conservation priority. No *Ichnestoma stobbiai* or *Trichocephala brincki* were found during the surveys. There appears to be no suitable habitat for *Ichnestoma stobbiai* or

Trichocephala brincki at the site. There appears to be no threat to any of the fruit chafer beetles of particular high conservation priority if the site were developed.

Species	Threatened Status	Recorded at site during survey	Likely to be resident based on habitat assessment
Ichnestoma stobbiai	Uncertain	No	No
Trichocephala brincki	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. None of these rock scorpions have been found at the site and the habitat does not appear to be optimal.

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

Ecological Sensitivity at the site

Ecological sensitivity at the site is low. Based on the present survey at the site and adjacent areas the ecological sensitivity of the area where the buildings have recently been constructed is likely to have been similar, low. There are no indications that the site where the buildings have recently been constructed would have contained sensitive ecosystems or sensitive species.

10.7.1.8. 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.

Three factors govern the significance of household fuel-burning emissions:

(i) the low level of emissions (that is, their height above the ground is generally about 3 m, within people's breathing zone);
(ii) the simultaneous occurrence of peak emissions (during the coldest months of winter and in the early mornings and throughout the evenings) and poor atmospheric dispersion (stable atmosphere with low wind speeds, with the possible development of temperature inversions); and
(iii) the release of such emissions within high human exposure areas, given that such emissions generally occur in dense, low-income settlements where population density is high (in addition, the pollution is not only outdoors, but frequently indoors as well, due to poor ventilation, so it affects the whole family).

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).

Given the high volumes of pollutants emitted from fuel-burning within the industrial and power-generation sectors, their contribution to ambient concentrations and public health risks is often lower than might be expected. This is because these sources are generally characterized by constant releases, relatively high above ground level, and further away from residential settlements than are household fuel-burning and vehicle emissions.

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.

Many low-cost housing developments and informal settlements are located close to industrial and mining operations, as such land is both available and inexpensive. Poorer communities are more likely to suffer from poor service delivery, including inadequate waste removal that sometimes results in refuse being set alight illegally. These examples show that poverty alleviation could help to improve air quality by enabling people to choose practices that are friendlier to the environment."

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).

10.7.1.9 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.

10.7.1.11 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 sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the physical assessment. If any sites did exist here in the past it would have been largely disturbed or destroyed by past historical and recent urban & housing related development activities in the study and larger area around it.

A section of the study and development area has already been developed and impacted by construction (housing & related) activities. Although sections of the area is still open no sites or material of cultural heritage origin were identified here as well.

Earlier aerial views of the specific study area shows that in 2001 it was still fairly open and undeveloped, but by 2017 large-scale ground clearance had commenced and the surrounding areas had been impacted as well by growing urban housing & other developments. It is therefore believed that if any sites, features or material of archaeological or historical nature did exist here in the past it would have been extensively disturbed or destroyed as result.

10.7.2 SOCIOLOGICAL AND ECONOMIC ISSUES

Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. The formalization of this area into a residential area is welcomed by the community as these activities have stopped.

This is one of the first secured residential estate of its kind in Mafikeng. The only other one is Leopard Park which was done probably 30 years ago and it only offers stands for sale where the clients must build their own houses costing anywhere between 2.5mil-4mil. The development will be offering housing options within a varied price range. The development provides clients with a turnkey housing option within the secured environment.

The local municipality intends to promote the infilling of open spaces between existing townships in order to provide the necessary housing for people living within their jurisdiction. The Spatial Development Framework (SDF) addresses the scale or urban growth through planned extensions and redevelopment strategies. The local municipality is aware of the need to integrate urban settlements, with a view to reduce travel distances to the areas of employment opportunities. It also addresses measures to promote compact and connected growth opportunities, such as the identification of revitalisation zones, densification and mixed land use zones. For any development to be sustainable and viable, land development and planning should ensure that communities are located close to job opportunities, social facilities and basic services.

There is a definite need for the residents to have reasonable access to opportunities and facilities that supports living in the urban Settlement. It is the responsibility of the local municipality to ensure that the residents have reasonable access to community services and amenities, as well as employment opportunities and that the form of land development need to provide for basic needs in an affordable way. The proposed development will be in line with this principle by ensuring that people living in the area do in fact have reasonable access to opportunities and facilities.

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.

10.7.2.1 AESTHETICS

Aesthetics have very little influence as the area is already highly disturbed. 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 site to a residential area. The visual intrusion is considered to be low as the minimal change and blends in well with the surroundings.

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

10.8. ENVIRONMENTAL MANAGEMENT OBJECTIVES AND TARGETS

The following table is a summary of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process.

ENVIRONMENTAL ASPECTS	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS
DOCUMENTATION AND TRAINING		
The necessary documentation must be available in the site office	Ensure that all concerned is aware of the EMPr and related environmental aspects	Availability of documents Trained and informed workforce.
SITE ACCESS & TRAFFIC MANAGEMENT		
Access roads may increase the construction footprints	Construction vehicles, machinery and workers must be restricted to the designated access roads, and may not drive through undeveloped vegetation outside of the existing access route except where that vegetation falls within the authorised working area (development footprint) at the site.	Minimizing eradication of vegetation.
VEGETATION CLEARING		
Vegetation will be cleared from within the footprint of the working area, before earthmoving and construction activities commence.	Vegetation clearing may only commence once the working area has been clearly demarcated to the ECO's satisfaction.	Land clearing must be restricted to the demarcated working area, and no vegetation may be cleared outside of the demarcated working area.
TOPSOIL & SUBSOIL MANAGEMENT		
Topsoil (where present) will be removed from any area where physical disturbance of the surface will occur.	Removed topsoil and subsoil should be stockpiled for the duration of the active construction period, and utilized for the final landscaping and rehabilitation of disturbed areas on site	The topsoil must be adequately protected from being blown away or eroded by storm water. Removed subsoil should be stockpiled separately from topsoil. Topsoil should be the final layer applied during rehabilitation, after subsoil/ spoil material has been placed and shaped on the site
EXCAVATIONS & EARTHWORKS		
It will be necessary to employ heavy machinery (excavators, back-actors, bulldozers, dump trucks etc.) for the earthmoving required	Use of heavy machinery can substantially increase the likelihood, intensity and significance of potential negative environmental impacts, and it is thus essential that earthworks be performed under constant supervision, and that operators must be made aware of all the environmental obligations, as there is always the potential to inflict damage to sensitive areas.	Use of machinery should be restricted to only that which is strictly required, and the unnecessary or excessive movement/ use of such machinery must be kept to a minimum. Machinery must enter and exit the site via the indicated access roads, and may not enter/ exit the river channel at any other location. Excavations and earth-moving may only take place within the demarcated working area
DANGEROUS AND TOXIC MATERIALS (CHEMICALS)		
Safe storage of chemicals See also below for further aspects on this subject	Clean environment	No spills of chemicals

ENVIRONMENTAL ASPECTS	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS
Availability of safety kits to prevent oils/toxic materials spreading in the environment Proper storage must be provided for chemicals , paint and construction materials needed	Safe storage of materials	Proper storage provided
STORAGE OF OIL AND FUEL		
Safe handling of fuel and oil and prevention of spills.	Clean environment	No spills of oil or fuel No leakages of oil
USE OF OIL AND CHEMICALS		
Drip trays must be provided for vehicles in storage yard Wash bay and oil trap to be provided	No spills of oil Cleaning area for vehicles	No oil spills from vehicles No oil or fuel into environment due to cleaning of vehicles or equipment
STORAGE OF CEMENT		
Safe handling of cement	Clean environment	No spills of cement
STORAGE OF EQUIPMENT AND MATERIALS		
Safe and proper storage of equipment and material	Safe and proper storage of equipment and material	Neat, clean and ordered storage of material
CONCRETE		
The contractors must provide information on proposed handling of concrete.	Minimise the possibility of concrete residue entering into the surrounding environment	No evidence of contaminated soil on the construction site
TOILETS AND ABLUTION FACILITIES		
Clean sanitary environment	Clean and sanitary environment	Toilets for workers in accordance with the instructions in the EMP
WASTE MANAGEMENT		
A clean and waste free environment	Clean environment with waste handled in accordance with the EMP	No waste in the environment
WORKSHOP EQUIPMENT, MAINTENANCE AND STORAGE OF MATERIAL		
Clean and safe work area	Clean and safe work area	Safe and clean work and storage area
FIRES		
No burning of waste and or fires originating from the construction area	No burning of waste and or fires originating from the construction area	No fire incidents
OTHER ENVIRONMENTAL ASPECTS		
Stockpiles All stockpiled material must be easily accessible without any environmental damage to adjacent grasslands/farmlands. All temporarily stockpiled material must be stockpiled in such a way that the spread of materials are minimised. The stockpiles may only be placed within the demarcated areas - the location of which must be approved by the ER or ECO. Stockpiled material at batching plant must be contained to prevent the spread of gravel in the area.	Properly constructed and well maintained stockpiles	No erosion or spread of material from stockpiles Gravel stockpiles must be properly managed
Erosion, sedimentation and storm water No erosion and or sedimentation	• Minimise scarring of the soil surface and land features	No erosion or sedimentation.

ENVIRONMENTAL ASPECTS	MANAGEMENT OBJECTIVES	MEASURABLE TARGETS
Vegetation The contractor must avoid vegetated areas that will not be cleared. **Palaeontological and Cultural Historical Heritage** Any potential finds must be demarcated and the appropriate specialist must be contacted in order to advise on necessary measures	• Minimise disturbance and loss of soil • Minimise construction footprint Minimise impacts on vegetation Ensure finds are reported and necessary action taken to protect potential Heritage features	Limit impact on vegetation Trained and informed workforce.
Waste management Any illegal dumping of waste must not be tolerated. This aspect must be closely monitored and reported on; proof of legal dumping must be able to be produced on request. Bins must be clearly marked for ease of management. Sufficient closed containers must be strategically located around the construction site to handle the amount of litter, wastes, rubbish, debris, and builder's wastes generated on the site.	• Sustainable management of waste; to keep the site neat and tidy. This will control potential influx of vermin and flies thereby minimising the potential of diseases on site and the surrounding environment. It will also minimise the potential to pollute soils, water resources and natural habitats	• Disposal of rubble and refuse in an appropriate manner with no rubble and refuse lying on site • Sufficient containers available on site
Dust Dust production must be controlled by regular watering of roads and works area, should the need arise.	Reduce dust fall out	No visible signs of dust
SAFETY	Children's access to construction site controlled, Access to construction camp controlled Safety aspects considered	No children on construction site Safety fence and controlled access available Safety signs with necessary information displayed

10.9. ENVIRONMENTAL IMPACT MANAGEMENT OUTCOMES

10.9.1 ASSESSMENT CRITERIA

Impacts were rated using the following methodology

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)
	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

Nature of the potential impact		Description of the effect, and the affected aspect of the environment
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.

10.9.2 ENVIRONMENTAL IMPACT MANAGEMENT OUTCOMES

The following **Environmental Impact Management Outcomes** have been identified:

1. A full copy of the signed EA from DEDECT in terms of NEMA, granting approval for the development must be available on site
2. A copy of the EMPr as well as any amendments thereof must be available on site
3. A suitably qualified ECO must be appointed.
4. Impacts on the environment must be minimised during site establishment and the development footprint must be kept to the approved development area.
5. Vegetation clearing may not commence until such time as the development footprint has been clearly defined.
6. No clearance of vegetation outside of the development footprint may occur.
7. At the end of the construction phase the site and its surrounding area must be free from any pollution that originated as a result of the construction activities.
8. No disturbance of topsoil & subsoil may commence until such time as the development footprint has been clearly defined.
9. No disturbance of topsoil & subsoil outside of the development footprint may occur.
10. At the end of the construction phase the site and its surrounding area must be free from any chemical, fuel, oil and cement spills that originated as a result of the construction activities.
11. At the end of the construction phase the site and its surrounding area must be free from any sewage that originated as a result of the construction activities.
12. At the end of the construction phase the site and its surrounding area must be free from any hazardous or general waste pollution that originated as a result of the construction activities.
13. Dust prevention measures must be applied to minimise the generation of dust.
14. Noise prevention measures must be applied to minimise the generation of unnecessary noise pollution as a result of construction activities on site.
15. Absolutely no burning of waste is permitted.
16. Fires will only be allowed in facilities especially constructed for this purpose.
17. No hunting of animals will be allowed.
18. No intentional destruction of any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance may occur.
19. All Contractors and sub-contractors must abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.
20. All Contractors and sub-contractors must abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.

10.10. MITIGATION MEASURES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE	A full copy of the signed EA from DEDECT in terms of NEMA, granting approval for the development **must** be available on site	Obtain the Environmental Authorization and plan to have a copy of the signed EA on site.	Ensure that a signed copy of the EA is available in the site office	No action required	The Applicant, assisted by the EAP to be monitored by the ECO
	A copy of the EMPr as well as any amendments thereof **must** be available on site	Ensure that a site specific EMPr is compiled and approved and plan to have a copy of the approved document on site	Ensure that a copy of the approved EMPr is available in the site office	No action required	The Applicant, assisted by the EAP to be monitored by the ECO
	A suitably qualified ECO **must** be appointed.	Prior to the start of construction activities, an ECO must be appointed to ensure that an Environmental Control document is compiled. This document must explain the roles and responsibilities of	Ensure that the ECO document is available on site and that everyone on site is informed and trained regarding their Environmental obligations in terms of the EA and EMPr. Records of training sessions must be kept on site.	No action required	The Applicant and the ECO

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	**Construction phase**	**Operational phase**	
		everyone involved and must also contain an Environmental awareness training manual.			
			ECO's report must be an item on monthly site meeting agenda	No action required	The project manager.
		The ECO must ensure that the contractor provides method statements for the various environmental aspects.	The method statements must be available in the site office	No action required	The Applicant and the contractor must ensure that the method statements are developed and approved by the ECO
SITE ESTABLISHMENT	Impacts on the environment **must** be minimised during site establishment and the development footprint must be kept to the approved development area.	A Land surveyor must peg the parameters of the development footprint.	Construction vehicles, machinery and workers must be restricted to only operate within the approved development footprint.	No action required	The developer must ensure that a Land surveyor pegs the parameters of the development footprint and that all concerned are trained in this regard. The ECO
			The development footprint must be clearly demarcated and the extent of this area must be communicated to all contractors and sub-contractors.		
			Existing access roads must be utilised to access the site camp(s) and working/ construction areas		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			Appropriate traffic management strategies must be implemented to ensure the safety of construction vehicles and other road-users. If needed, signage to warn other road users of the presence of construction vehicles should be erected at appropriate locations, where the signage will be clearly visible to potentially affected road users.		will monitor compliance.
VEGETATION CLEARING	Vegetation clearing **may not commence** until such time as the development footprint has been clearly defined. No clearance of vegetation outside of the development footprint **may** occur.	A Land surveyor must peg the parameters of the development footprint.	Land clearing must be restricted to the demarcated working area, and no vegetation may be cleared outside of the demarcated working area.	If the development is approved a key issue would be continued monitoring and eradication of alien invasive plant species. It is in particular alien invasive species such as *Melia azedarach* (Syringa) and invasive *Prosopis glandulosa* (Mesquite) which should not be allowed to establish.	The developer must ensure that a Land surveyor pegs the parameters of the development footprint and that all concerned are trained in this regard. The ECO will monitor compliance.

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
				If the development is approved an opportunity presents itself to cultivate indigenous plant species which would benefit urban nature conservation	
STORM AND WASTE WATER MANAGEMENT	At the end of the construction phase the site and its surrounding area **must** be free from any pollution that originated as a result of the construction activities.	The developer must compile a storm water management plan.	Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager	No action required	The developer must ensure that a storm water management plan is developed. The ECO must monitor compliance.
			All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility.		
			No wastewater may run freely into any naturally vegetated areas. Run-off containing high sediment loads must not be released into drainage channels		
			Approval must be obtained from DW&S for any activities that require authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998.		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			Surface water or storm water must not be allowed to concentrate, or to flow down cut or fill sloped routes without erosion protection measures being in place		
			Ensure that storm water channels do not discharge straight down contours. These must be aligned at such an angle to the contours that they have the least possible gradient		
			To reduce the loss of material by erosion, the contractor must ensure that disturbance on site is kept to a minimum. The contractor is responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed		
TOPSOIL & SUBSOIL	**No** disturbance of topsoil & subsoil may commence until such time as the development footprint has been clearly defined.	A Land surveyor must peg the parameters of the development footprint.	Land clearing must be restricted to the demarcated working area, and no disturbance of topsoil & subsoil outside of the demarcated working area will be allowed.	No action required	The developer must ensure that a Land surveyor pegs the parameters of the development footprint and that all concerned are trained in this regard.
			Removed topsoil and subsoil should be stockpiled for the duration of the active construction period, and utilized for the final landscaping and rehabilitation of disturbed areas.		
			The topsoil must be adequately protected from being blown away or eroded by storm water.		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			The topsoil storage area must be located on a level area outside of any surface drainage/ storm-water channels, and at a location where it can be protected from disturbance during construction and where it will not interfere with construction activities. Removed subsoil should be stockpiled separately from topsoil. Handling of topsoil should be minimized as much as possible, and the location of the topsoil berm should be chosen carefully to avoid needing to relocate the topsoil berm at a later date. Ideally, topsoil is to be handled twice only, once to strip and stockpile, and once to replace, level, shape and scarify. The topsoil berm may be a few meters wide but should ideally not be more than 0.5m high to allow sufficient light and air penetration. Topsoil should be the final layer applied during rehabilitation, after subsoil/ spoil material has been placed and shaped.		The Contractor will be responsible for the removal and correct stockpiling of the topsoil and subsoil. The ECO will monitor compliance.
	No disturbance of topsoil & subsoil outside of the development footprint **may** occur.				
		CHEMICALS			

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
DANGEROUS AND TOXIC MATERIALS	At the end of the construction phase the site and its surrounding area **must** be free from any chemical, fuel, oil and cement spills that originated as a result of the construction activities.	The Contractor must provide method statements for the storage and handling of chemicals on site.	All hazardous substances must be stored in suitable containers as defined in the Method Statement;	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for training of staff in this regard. The ECO will monitor compliance.
			Containers must be clearly marked to indicate contents, quantities and safety requirements		
			All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers		
			Bunded areas to be suitably lined with a SABS approved liner		
			An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis		
			All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS);		
			All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet		
			Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available		
		FUEL AND OIL			

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
		The Contractor must provide method statements for the storage and handling of fuel and oil on site.	The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for training of staff in this regard. The ECO will monitor compliance.
			Fuel storage tanks must be located in a portion of the construction camp where they do not pose a high risk in terms of water pollution (i.e. they must be located away from water courses)		
			The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 110% of the total capacity of all the storage tanks/ bowsers		
			The floor of the bund must be sloped, draining to an oil separator		
			Provision must be made for refuelling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained		
			All empty externally dirty drums must be stored on a drip tray or within a bunded area		
			Spill kits must be available on site and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. Spill kits must be made up of		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			material/product that is in line with environmental best practice (SUNSORB is a recommended product that is environmentally friendly)		
			Where refuelling away from the dedicated refuelling station is required, a mobile refuelling unit must be used. Appropriate ground protection such as drip trays must be used		
			The responsible operator must have the required training to make use of the spill kit in emergency situations		
			In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008.		
			During servicing of vehicles or equipment, a suitable drip tray must be used to prevent spills onto the soil.		
			Leaking equipment must be repaired immediately or be removed from site to facilitate repair		
			Construction area must be monitored for oil and fuel spills		
			Drip trays (minimum of 10cm deep) must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			must not be left unattended, drip trays must be utilised. The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing.		
		CONCRETE AND CEMENT			
		The contractors must provide and maintain a **method statement** for "cement and concrete batching". The method statement must provide information on proposed storage, washing & disposal of cement, packaging, tools and plants	The mixing of concrete must only be done at specifically selected sites on mortar boards or similar structures to contain run-off into soils rocky outcrops, streams and natural vegetation	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for training of staff in this regard. The ECO will monitor compliance.
			Cleaning of cement mixing and handling equipment must be done using proper cleaning trays		
			All empty containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed facility		
			Any spillage that may occur must be investigated and immediate remedial action must be taken		
			The visible remains either of concrete, solid, or from washings, must be physically removed immediately or disposed of as waste to a registered landfill site		
			Cement batching areas must be located in an area where residues are contained and that the location does not fall within storm water channels		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
TOILETS AND ABLUTION FACILITIES	At the end of the construction phase the site and its surrounding area **must** be free from any sewage that originated as a result of the construction activities.	The contractor must provide method statement for the operation and maintenance of toilets and ablution facilities	The contractor is responsible for providing all sanitary arrangements for his and the sub-contractors team. A minimum of one chemical toilet must be provided per 30 persons and should include male and female toilets.	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for training of staff in this regard. The ECO will monitor compliance.
			Sanitary arrangements must be to the satisfaction of the ECO. The contractor must keep the toilets in a clean, neat and hygienic condition. The contractor must supply toilet paper to all toilets at all times. Toilet paper dispensers must be provided in all toilets		
			The contractor must be responsible for the cleaning, maintenance and servicing of the toilets. The contractor must ensure that no spillage occurs when the toilets are cleaned or emptied.		
			The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances		
			Toilets out on site must be secured to the ground and have a sufficient locking mechanism operational at all times		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
WASTE MANAGEMENT	At the end of the construction phase the site and its surrounding area **must** be free from any hazardous or general waste pollution that originated as a result of the construction activities.	The contractors must provide and maintain a method statement for "solid waste management". The method statement must provide information on the proposed licensed facility to be utilised and details must be kept of record keeping for auditing purposes	Waste must be separated into recyclable and non-recyclable waste, and must be separated as follows: • **Hazardous waste**: including (but not limited to) old oil, paint, etc. • **General waste**: including (but not limited to) paper, plastic, glass and construction rubble	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for training of staff in this regard. The ECO will monitor compliance.
			Any illegal dumping of waste must not be tolerated, this action will result in a fine and if required further legal action will be taken. This aspect must be closely monitored and reported on; proof of legal dumping must be able to be produced on request.		
			Bins must be clearly marked for ease of management		
			All refuse bins must have a lid secured so that animals cannot gain access		
			Sufficient closed containers must be strategically located around the construction site to handle the amount of litter, wastes, rubbish, debris, and builder's waste generated on the site		
			Subcontractor(s) contracts must contain a clause to the effect that the disposal of all construction-generated refuse / waste to an officially approved dumping site is the		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			responsibility of the subcontractor in question and that the subcontractors are bound to the management activities stipulated in this EMP. Proof of this undertaking must be issued to the ECO		
			All solid and chemical wastes that are generated must be removed and disposed of at a licensed waste disposal site. The contractor is to provide proof of such to the ECO		
			Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site		
			A suitably positioned and clearly demarcated waste collection site must be identified and provided The waste collection site must be maintained in a clean and orderly manner. A covered container (Like a skip, with a cover), must be used to contain refuse from campsite bins, rubble and other construction material		
DUST	Dust prevention measures **must** be applied to minimise the generation of dust.	The contractors must provide and maintain a method statement for "dust control". The method statement must provide information on the	All forms of dust pollution must be managed in terms of the National Environmental Management: Air quality Act, 2004 (Act No 39 of 2004)). Acceptable dust fall rates for residential areas are:	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
		proposed source of water to be utilised.	**Dust fall rate (D) (mg/m²/day, 30 days average:** D<600 **Permitted frequency of exceeding dust fall rate:** Two within a year, not sequential months A standard test method to be used for measuring dust fall rate and the guideline for locating sampling points shall be ASTM D1739. The latest version of this method shall be used.		training of staff in this regard. The ECO will monitor compliance.
			Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be revegetated or stabilised as soon as is practically possible.		
			Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present		
			The construction camp must be watered during dry and windy conditions to control dust fallout.		
			Dust production must be controlled by regular watering of roads and work area, should the need arise		
			During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust damping		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level		
			Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind		
			Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO		
			Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas		
NOISE	Noise prevention measures **must** be applied to minimise the generation of unnecessary noise pollution as a result of construction activities on site.	The contractors must provide and maintain a method statement for noise.	All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained.	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for training of staff in this regard. The ECO will monitor compliance.
			Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise Management. It is proposed that normal working hours are between 08h00 and 17h00 (Mondays to		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			Saturdays). No work will be allowed on Sundays or outside of the abovementioned hours.		
			Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers.		
FIRES	Absolutely **no** burning of waste is permitted.	The contractors must provide and maintain a method statement for "fires", clearly indicating where and for what, fires will be utilised plus details on the fuel to be utilised	Absolutely no burning of waste is permitted.	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for training of staff in this regard. The ECO will monitor compliance.
	Fires will **only** be allowed in facilities especially constructed for this purpose.		Fires will only be allowed in facilities especially constructed for this purpose within fenced Contractor's camps. Wood, charcoal or anthracite are the only fuels permitted to be used for fires. The contractor must provide sufficient wood (fuel) for this purpose.		
			Fires within the designated areas must be small in scale so as to prevent excessive smoke being released into the air.		
			The contractor must designate a smoking area for the labour force so as to prevent unanticipated incidents of veldt fires.		
			No wood is to be collected, chopped or felled for fires from private or public property as well as from no-go or sensitive areas within the site and any surrounding natural vegetation		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
FAUNA	**No** hunting of animals will be allowed.	Plan to ensure that all activities on site must comply with the regulations of the Animal Protection Act, 1962 (Act No. 71 of 1962)	All construction workers must be informed that the intentional killing of any animal is not permitted as faunal species are a benefit to society. Poaching is illegal and it must be a condition of employment that any employee caught poaching will be dismissed. Employees must be trained on how to deal with fauna species as intentional killing will not be tolerated. In the case of a problem animal e.g. a large snake, a specialist must be called in to safely relocate the animal. Environmental induction training and awareness must include aspects dealing in safety with wild animals into and on site. Focus on animals such as snakes and other reptiles that often generate fear by telling workers how to move safely away and to whom to report the sighting. Workers should also be informed where snakes most often hide so that they can be vigilant when lifting stones, etc.	No Action required	The Contractor will be responsible for providing method statements. He will also be responsible for training of staff in this regard. The ECO will monitor compliance.
HERITAGE	**No** intentional destruction of any sites, features or material of cultural heritage	Conduct a Phase 1 HIA for the development to identify any sites, features or material	In terms of the National Heritage Act, 1999 (Act No. 25 of 1999), construction personnel must be alert and must inform the local heritage agency within 48 hours should they come across any signs of heritage resources.	No action required.	The developer and applicant. Study to be conducted by a

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
	(archaeological and/or historical) origin or significance may occur.	of cultural heritage (archaeological and/or historical) origin or significance.	Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance.		suitable qualified specialist. Findings to be monitored by the ECO.
			Should any archaeological artefacts be exposed during site activities, work on the area where the artefacts were found must cease immediately and the ECO must be notified immediately.		
			All work must cease immediately, if any human remains are uncovered. Such material, if exposed, must be reported to the South African Police Services, so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences		
CRIME, SAFETY AND SECURITY	All Contractors and sub-contractors **must** abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.	Plan to appoint a health and safety officer for the construction site.	The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) and the National Building Regulations	No actions required	Health and safety officer.
		Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the project	The contractor must ensure that all emergency procedures are in place prior to commencing work. Emergency procedures must include (but not be limited to) fire, spills, contamination of the ground, accidents to employees, use of hazardous substances and materials, etc.		

ENVIRONMENTAL ASPECT	ENVIRONMENTAL IMPACT MANAGEMENT OUTCOME	ENVIRONMENTAL IMPACT MANAGEMENT ACTIONS			RESPONSIBLE PERSON
		Pre-construction phase	Construction phase	Operational phase	
			The contractor must ensure that lists of all emergency telephone numbers / contact persons are kept up to date and that all numbers and names are posted at relevant locations throughout the construction site.		
			Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc		
			All unattended open excavations must be adequately fenced or demarcated.		
			Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.		
			Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS. The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area		
			Workers must be instructed not to trespass onto adjacent land. Trespassers will be prosecuted.		

10.11. ENVIRONMENTAL AWARENESS PLAN

10.11.1 INTRODUCTION

Training is essential for ensuring that the EMP provisions are implemented efficiently and effectively. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard.

The Construction Contractor should make allowance for all construction workers, including all subcontractors that will be working at the site, to attend environmental awareness training sessions (undertaken by the ECO) before commencing work on site. During this training, the ECO will explain the EMP and the conditions contained therein. Attention will be given to the construction process and how the EMP fits into this process.

In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This ensures that environmental accidents are minimized and environmental compliance maximized.

Environmental awareness training and education should be ongoing throughout the construction phase, and should be undertaken regularly if deemed necessary (especially if it becomes apparent that there are repeat contraventions of the conditions of the EMP), or as new workers come to site. Translators should be utilized where needed.

Environmental awareness could be fostered in the following manner:

- Induction course for all workers on site, before commencing work on site.
- Refresher courses as and when required.
- Daily toolbox talks at the start of each day with all workers coming on site, where workers might be alerted to particular environmental concerns associated with their tasks for that day or the area/habitat in which they are working.

Courses must be given by suitably qualified personnel and in a language and medium understood by workers/employees.

10.11.2 ORGANISATIONAL STRUCTURE

This section describes the roles and responsibilities of the key stakeholders involved in the development, implementation and review of the EMP.

10.11.2.1 PROJECT PROPONENT

The Project Proponent will be the ***Acetech Infra Pty Ltd***. Ultimately, they will be responsible for the development and implementation of the EMP and MMP and for ensuring that the conditions in the eventual Environmental Authorization (EA) are satisfied. Although construction activities will be contracted out, the liability associated with non-compliance still rests with the Project Proponent. The Project Proponent (and not the Contractor) is therefore responsible for liaising directly with the relevant authorities with respect to the preparation and implementation of the EMP and meeting EA conditions.

The Project Proponent must inform the Contractor of the EA and EMP obligations, as well as **Method Statements** to be prepared and environmental training to be undertaken by the Contractor in terms of these obligations.

The Project Proponent must identify a **Project Manager (PM)** who has overall responsibility for managing the Project, Contractors and for ensuring that the environmental management requirements are met. During the construction phase, the Project Manager will be the Proponent's construction manager; during the operations phase this role will be fulfilled by the operations manager.

All decisions regarding environmental procedures and protocol must be approved by the Project Manager, who also has the authority to stop any construction activity in contravention of the EMP or EA.

An **Environmental Control Officer (ECO) must** be employed by the Project Proponent for the duration of the project. The ECO should have appropriate training and experience in the implementation of environmental management specifications. The ECO provides feedback to the Project Manager regarding all environmental matters. Contractors are answerable to the ECO (or Project Manager, depending on contractual arrangements) for non-compliance with the requirements stated in the EMP or EA.

10.11.2.2 ENVIRONMENTAL CONTROL OFFICER (ECO)

The appointed Environmental Control Officer (ECO) is responsible for monitoring the site at regular intervals (including pre-construction set-up and final rehabilitation), in order to ensure that the provisions of this EMP is adhered to and that sound environmental management is ensuing on site.

The ECO must inspect all areas of the site that may be affected by construction-related activities, including the working area, site camp, stockpile areas and access roads. After each ECO inspection the ECO must compile an ECO report detailing the ECO's observations on site, any instances of non-compliance and any issues or aspects that require attention, follow-up or remedial action. The ECO reports must be submitted to the Applicant, the ER, Construction Contractor(s) and the Competent Authority. The ECO inspection reports should include both photographic and written records.

The ECO will have the following responsibilities:

- Maintenance, update and review of the EMP.
- Liaison between the Project Proponent, Contractors, authorities and other lead stakeholders on all environmental concerns.
- Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective.
- Monitoring the performance of the Contractor (and Sub-contractors) and ensuring compliance with the EMP and associated Method Statements.
- Validating the regular site inspection reports, which are to be prepared by the Contractor's Environmental Officer (EO).

- Checking the EO's *record of environmental incidents* (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken.
- Checking the EO's *public complaints register* in which all complaints are recorded, as well as action taken.
- Issuing of site instructions to the Contractor for corrective actions required.
- Assisting in the resolution of conflicts.
- Communication of all modifications to the EMP to the relevant stakeholders.
- Conducting regular audits to ensure that the system for implementing the EMP is operating effectively.

10.11.2.3 CONTRACTOR

The Contractor should appoint a **Contractor's Representative**, who is responsible for the on-site implementation of the EMP and EA. The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. The Contractor's Representative ensures that all Sub-contractors working under the Contractor abide by the requirements of the EMP.

The Contractor is answerable to the Project Manager (PM) for all environmental issues associated with the project. Contractor performance will, amongst others, be assessed on health, safety and environmental management criteria.

The Contractor will be required to provide the following **Method Statements,** setting out in detail how the management actions contained in an EMP and EA will be implemented in order to ensure that the environmental management objectives are achieved. The Method Statements must be reviewed and approved by the Project Proponent.

> Stockpiles

> Excavation stabilisation

> Oil and chemicals

> Cement

> Storage of fuel and oils

> Use of dangerous and toxic materials

> Toilets and ablution facilities

> Waste Management

> Dust

> Workshop equipment, maintenance and storage

> Noise

> Fires

> Erosion and sedimentation

> Flora and Fauna (Including no-go areas)

> Crime, safety and security

> Hydrology

The Contractor may appoint an **Environmental Officer (EO)**, or officers, if more than one is required. Their primary role is to coordinate the environmental management activities of the Contractor on site. The EO may be required to perform the following roles:

- Support the ECO in the monitoring and execution of the Contractors or Sub-contractors' Method Statements by maintaining a permanent presence on site.
- Inspect the site as required to ensure adherence to the management actions of the EMP, EA and the Method Statements.
- Complete Site Inspection Forms on a regular basis (eg. daily or weekly).
- Provide inputs to the regular (eg. monthly) environment report to be prepared by the ECO.
- Liaise with the construction team on issues related to implementation of, and compliance with, the EMP and EA.
- Maintain a *record of environmental incidents* (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken, for submission to the Project Proponent.
- Maintain a *public complaints register* in which all complaints are recorded, as well as action taken, for submission to the Project Proponent.

10.11.3 CHECKLISTS

The table below provide the main mitigation measures and/or management interventions to minimise or reduce the negative impacts and enhance positive impacts identified by the specialists associated with the proposed development.

The intent is for the document to be a live, dynamic document that should be maintained and updated throughout the project lifecycle, *inter alia*, by including the necessary Environmental Authorisation from the approving Authority as an attachment.

The table below provide the main mitigation measures and/or management interventions appropriate to the Planning and Construction Phases of the proposed project. The tables present the objectives to be achieved and the management actions that need to be implemented in order to reduce the negative impacts and enhance the positive impacts per management activity. The associated monitoring and implementation frequencies and the responsible person(s) are indicated.

Activity/Impact		Action Required	Responsible Party	Monitoring Frequency
1.	Construction and operational activities planning	The construction/operational activities must conform to the conditions of authorisation contained in the Environmental Authorisation and mitigation measures contained within this EMPr	Proponent	Continuous
2.	Appointment of the ECO	The Proponent must appoint an independent Environmental Control Officer (ECO) who must monitor the Contractor's compliance with the EMPr and who must complete ECO checklist reports (audits) on a regular basis (at least once a month).	Proponent	Once-off
		The Proponent must provide the ECO with a copy of the EMPr.	ECO	Once-off
		The ECO must form part of the project management team and should attend the monthly project progress meetings.	ECO	Continuous
		The Contractor must ensure that the construction crew attend an environmental briefing and training session presented by the ECO prior to commencing activities on site.	ECO, Contractor	Once-off
3.	EMPr	This EMPr must be made binding to the main Contractor and to individual Contractors, and must be included in the tender documentation for the construction contract.	Proponent	Once-off
4.	Licences/ permits and permissions	The Proponent must ensure that all pertinent licences/permits, certificates and permissions required for the project have been obtained prior to any activities commencing on site and ensure that they are strictly enforced/adhered to. These documents must be made available on site at all times, and the Contractor must be made aware of their content.	Contractor, Proponent, ECO	Prior to commencement of work
		The Contractor must maintain a database of all pertinent permits and permissions required for the contract.	Contractor, Proponent, ECO	Continuous
5.	Method Statements	The Contractor must submit written Method Statements to the PM and ECO for the activities identified during consultation.	Contractor, PM, ECO	As required
		Method Statements must be submitted at least five working days prior to the proposed commencement of work on an activity to allow the PM (and/or ECO) time to study and approve the method statement.	Contractor, PM, ECO	As required
		The Contractor may not commence work on that activity until such time as the Method Statement has been approved in writing.	Contractor, PM, ECO	Continuous
		The Contractor must carry out the activities in accordance with the approved Method Statement.	Contractor, PM, ECO	Continuous

Activity/Impact		Action Required	Responsible Party	Monitoring Frequency
		Under certain circumstances, the PM may require changes to an approved Method Statement. In such cases the proposed changes must be agreed upon in writing between the Contractor and the PM, and appropriate records retained.	Contractor, PM, ECO	Continuous
		Approved Method Statements must be readily available on the site and must be communicated to all relevant personnel. Approval of the Method Statement shall not absolve the Contractor from any of his/her obligations or responsibilities in terms of the EMPr specifications.	Contractor, Proponent	Continuous
6.	Existing services and infrastructure	The Contractor must ensure that existing services (e.g. roads, pipelines, power lines and telephone services) are not damaged or disrupted unless required by the contract and with the permission of the PM, ensuring the necessary way-leaves; permissions and permits are in place.	Contractor, PM, ECO	Continuous
		The Contractor must be responsible for the repair and reinstatement of any existing infrastructure that is damaged, or services which are interrupted, at his/her own cost.	Contractor	As required
		The Contractor must adhere to any time limits for the repairs that may be stipulated by the PM in consultation with the Contractor.	Contractor, ECO	As required
7.	Environmental incidents	The Contractor must take timeous corrective action to mitigate an incident appropriate to the nature and scale of the incident and must also rehabilitate any residual environmental damage caused by the incident or by the mitigation measures themselves. The Contractor must adhere to any time limits for such corrective actions that may be stipulated by the ECO in consultation with the PM.	ECO, Contractor	Continuous
8.	Labour	Local labour must be used wherever possible to stimulate the local economy.	Contractor	Once-off
		The Contractor should use labour intensive construction measures where appropriate, practical and financially feasible.	Contractor	Once-off
		The workforce should be trained to benefit individuals beyond the completion of the project.	Contractor	Once-off
		The Contractor should use local suppliers where possible.	Contractor	Once-off
		The PM must ensure that all staff working on the project must be in possession of a South African Identity Document or a relevant work permit. A register must be kept on site of all staff working on site.	PM	Continuous
		Equal opportunities for employment should be created to ensure that all sectors of society (especially women) have equal access to such opportunities.	Contractor	Continuous
9.	Training of staff	The Contractor must ensure that all construction staff receive environmental awareness training concerning, amongst others, the prevention of accidental spillage of hazardous chemicals and oil; pollution of water resources (both surface and groundwater), air pollution and litter control and identification of archaeological artefacts, protection of any animals encountered on site, no-go areas, the use of toilets and basic sanitation, and basic health and safety on site.	Contractor, ECO	Once-off
		It is the Contractor's responsibility to provide the site foreman with environmental training (including explaining the content of the EMPr and any Conditions of Approval) and is to ensure that the foreman has sufficient understanding to pass this information onto the construction staff.	Contractor, ECO	Once-off
		Training must be provided to the staff members in the use of the appropriate fire-fighting equipment.	Contractor, Health and Safety Officer	Once-off
		The Contractor must ensure that all staff operating machinery/construction vehicles are adequately trained to carry out the designated tasks.	Contractor, Health and Safety Officer	Once-off

Activity/Impact	Action Required	Responsible Party	Monitoring Frequency
10. Worker health and safety	A Health and Safety Plan must be developed and implemented by the Contractor for the construction period to ensure worker safety. Should any injury be obtained as a result of work the Contractor must ensure the necessary medical attention is received. The necessary Health and Safety file and incident register must be kept on site at all times.	Contractor, Health and Safety Officer	Continuous
11. Site access & traffic management	Construction vehicles, machinery and workers must be restricted to the designated access roads, and may not drive through undeveloped vegetation outside of the existing access route except where that vegetation falls within the authorised working area (development footprint) at the site.	Contractor ECO	Continuous
12. Vegetation clearing	Vegetation clearing may only commence once the working area has been clearly demarcated to the ECO's satisfaction.	Proponent Contractor ECO	Once-off
13. EMPr	This EMPr must be made binding to the main Contractor and to individual Contractors, and must be included in the tender documentation for the construction contract.	Proponent	Once-off
14. Topsoil & subsoil management	Removed topsoil and subsoil should be stockpiled for the duration of the active construction period, and utilized for the final landscaping and rehabilitation of disturbed areas on site. The topsoil must be adequately protected from being blown away or eroded by storm water. Removed subsoil should be stockpiled separately from topsoil. Topsoil should be the final layer applied during rehabilitation, after subsoil/ spoil material has been placed and shaped on the site	Contractor ECO	Continuous
15. Excavations & earthworks	Use of heavy machinery can substantially increase the likelihood, intensity and significance of potential negative environmental impacts, and it is thus essential that earthworks be performed under constant supervision, and that operators must be made aware of all the environmental obligations, as there is always the potential to inflict damage to sensitive areas. Use of machinery should be restricted to only that which is strictly required, and the unnecessary or excessive movement/ use of such machinery must be kept to a minimum. Machinery must enter and exit the site via the indicated access roads, and may not enter/ exit the river channel at any other location. Excavations and earth-moving may only take place within the demarcated working area	Contractor ECO	Continuous
16. Groundwater contamination	Ensure vehicles are serviced and refuelled in bunded areas	Contractor	Continuous
	Ensure vehicles are checked weekly for faults and serviced timeously if faulty	Contractor	As required
	Should any leaks occur ensure contaminated soil is dug up to 1 cm below the level of visible contamination and disposed of as hazardous waste	Contractor	As required
	Drip trays should be placed under all vehicles remaining stationary for more than 24 hours	Contractor	Continuous
17. Noise	Limit construction activities to normal working hours	Contractor	Continuous
	Coincide any excessively noisy activities to minimise duration of inconvenience	Contractor	As required

Activity/Impact	Action Required	Responsible Party	Monitoring Frequency
	Ensure noise standards are complied with and that construction staff are provided with personal protective equipment when undertaking noisy operations	Contractor	Continuous
18. Safety	No children on construction site. Safety fence and controlled access should be enforced Safety signs with necessary information displayed	Proponent Contractor ECO	Continuous
19. Stockpiles	Soil stockpiles must not be situated within 50m of any water course.	Contractor, ECO	Monthly
	If stockpiles are exposed to windy conditions or heavy rain, they should be covered either by vegetation or cloth, depending on the duration of the project. Stockpiles may further be protected by the construction of berms or low brick walls around their bases.	Contractor, ECO	Monthly
	Stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding.	Contractor, ECO	Monthly
	Where contamination of soil is expected, analysis must be done prior to disposal of excess soil to determine the appropriate disposal method. Proof from an applicable waste disposal site where contaminated soils are dumped if and when a spillage / leakage occur must be provided to the ECO upon request.	Contractor, ECO	Monthly
	Stockpiles must not exceed 2m in height unless otherwise permitted by the PM and / or ECO.	Contractor, ECO	Monthly
20. Erosion control	Wind screening and stormwater control must be undertaken where required by the ECO to prevent soil loss from the site.	Contractor, ECO	Twice monthly
	The use of silt fences and sand bags must be implemented in areas that are susceptible to erosion, if required by the ECO.	Contractor, ECO	Twice monthly
	Other erosion control measures that can be implemented are as follows: • Brush packing with cleared vegetation; • Mulch or chip packing; • Planting of vegetation; and • Hydro-seeding / hand sowing.	Contractor, ECO	
	Sensitive areas need to be identified prior to construction so that the necessary precautions can be implemented.	Contractor, ECO	Twice monthly
	All erosion control mechanisms need to be regularly maintained.	Contractor, ECO	Twice monthly
	Re-vegetation of disturbed surfaces must occur as soon as possible after construction activities are completed.	Contractor, ECO	Twice monthly
	No impediment to the natural water flow o site other than approved erosion control or rehabilitation works is permitted.	Contractor, ECO	Twice monthly
	Stockpiles not used in three (3) months after stripping should be seeded to prevent dust and erosion, as advised by the ECO	Contractor, ECO	Twice monthly
21. Hazardous materials	Use and or storage of materials, fuels and chemicals which could potentially leak into the ground must be controlled.	Contractor, ECO	Monthly
	Any hazardous substances must be stored at least 50m from any of the watercourses on site in a bunded area.	Contractor, ECO	Monthly
	The Contractor must ensure that potentially harmful materials are properly stored in a dry, secure, ventilated environment, with concrete or sealed flooring and a means of preventing unauthorised entry. Such materials may also be temporarily stored on drip-trays.	Contractor, ECO	Monthly
	Contaminated wastewater must be managed by the Contractor to ensure existing water resources on the site are not contaminated. All wastewater from general activities in the camp must be collected and removed from the site for appropriate disposal at a licenced waste disposal facility or sewage works.	Contractor, ECO	Monthly

Activity/Impact	Action Required	Responsible Party	Monitoring Frequency
	All storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund wall must be high enough to contain 110% of the total volume of the stored hazardous material. Such bunded areas must be regularly emptied of accumulated rainwater. Wastewater from such emptying, if contaminated, must be disposed at an appropriately licenced waste disposal facility or sewage works.	Contractor, ECO	Monthly
	In the event of a spill, the Contractor must take prompt action to clear polluted areas and prevent spreading of the pollutants. The Contractor will be liable to arrange for professional service providers to clear affected areas, if required.	Contractor, ECO	As required
	Proper facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater. These pollution prevention measures for storage must include a bunded containment area with a wall high enough to contain at least 110% of any stored volume. This containment area must be sited at least 50m away from any drainage line, in a site approved by the ECO.	Contractor, ECO	Monthly
	Cement storage and batching must only take place in a bunded area, and any runoff		
	Any spillage, which may occur, must be investigated and immediate action must be taken. This must be reported to the ECO and to the relevant authorities if so required by the ECO.	Contractor, ECO	As required
22. Cement and concrete batching	Concrete must not be mixed on the ground, but in a bunded area with any runoff captured for disposal as hazardous wastewater.	Contractor, ECO	Continuous
	The batching area is to be located in an area of low environmental sensitivity, as approved by the ECO.	Contractor, ECO	Once-off
	Cement bags must only be stored in a covered, bunded area and not directly on the ground. Used cement bags must be disposed of as hazardous waste.	Contractor, ECO	Weekly
23. Hydrology and stormwater	Silt fences must be used where required by the ECO to remove any suspended silt from stormwater before it enters the stormwater system.	Contractor, ECO	Monthly
	Temporary cut-off drains and berms must be used where necessary to capture stormwater and promote infiltration.	Contractor, ECO	Monthly
	Stormwater and surface water must be diverted away from excavation trenches, and care must be taken to avoid surface stormwater from the site running into the seasonal pan on the site.	Contractor, ECO	Monthly
	No rubble, litter or sand may be deposited into any freshwater systems or water courses.	Contractor, ECO	Monthly
24. General materials handling, use and storage	Choice of location for storage areas must take into account prevailing winds, distances to the seasonal watercourses (50m minimum), general onsite topography and water erosion potential of the soil. Impervious surfaces must be provided where necessary.	Contractor, ECO, Health and Safety Officer	Once-off
	Storage areas must be designated, demarcated and fenced. Storage areas must be secure so as to minimize the risk of crime. They must also be safe from access by unauthorised persons. Fire prevention facilities must be present at all storage facilities.	Contractor, ECO	Monthly
	Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. Where possible, the available MSDSs should include information on ecological impacts and measures to minimise negative environmental impacts during accidental spills.	Contractor, ECO, Health and Safety Officer	Once-off, as required
	Clear signage must be placed at all storage areas containing hazardous substances / materials.	Contractor, ECO, Health	Once-off

Activity/Impact	Action Required	Responsible Party	Monitoring Frequency
		and Safety Officer	
	The Contractor must be responsible for the training and education of all personnel on site who will be handling the hazardous material about its proper use, handling and disposal. The Contractor must ensure that information on the management of spill and accidental ingestion is kept on site. Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures.	Contractor, Health and Safety Officer	Once-off
	The provisions of the Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act 85 of 1993 and the SABS Code of Practice must be adhered to. This applies to solvents and other chemicals possibly used in the construction time.	Contractor, Health and Safety Officer	Continuous
	The Contractor must ensure that its staff is made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training.	Contractor, Health and Safety Officer	Continuous
	All excess cement and concrete mixes must be contained on the construction site prior to disposal off site.	Contractor, ECO	Monthly
	Hazardous substances must be stored at least 50m away from any water bodies on site to avoid pollution.	Contractor, ECO	Monthly
25. Fuel storage	Topsoil and subsoil to be protected from contamination.	Contractor, ECO	Monthly
	Fuel and material storage must be away from stockpiles on site in appropriate containers in a bunded area.	Contractor, ECO	Twice monthly
	Chemicals must be mixed on an impermeable surface and provisions must be made to contain spillages or overflows into the soil.	Contractor, ECO	Monthly
	Any storage tanks containing hazardous materials must be placed in bunded containment areas with sealed surfaces. The bund walls must be high enough to contain 110% of the total volume of the stored hazardous material. Drip trays may be used for temporary storage of such materials.	Contractor, ECO	Monthly
	Contaminated soil must be contained and disposed of off-site at an approved hazardous waste disposal site.	Contractor, ECO	Monthly
26. Transportation	Material must be appropriately secured to ensure safe passage between destinations during transportation. Loads must have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor must be responsible for any clean-up resulting from the failure by his employees or suppliers to property secure transported materials.	Contractor, ECO, Health and Safety Officer	Monthly
27. General waste management	Litter generated by the construction crew must be separated on site into general waste and recyclables and collected in covered rubbish bins. General waste is to be removed to a licenced landfill site on a weekly basis and recyclables must be taken to a recycling centre monthly.	Contractor, ECO	Weekly/ Monthly
	Ensure that no refuse wastes are burnt on the premises or on surrounding premises. No fires shall be allowed on site, unless in designated areas approved by the PM and by the ECO or by the Health and Safety Officer.	Contractor, ECO, PM, Health and Safety Officer	Monthly
	The Contractor must supply waste bins/skips throughout the site at locations where construction personnel are working. The bins must be provided with lids and an external closing mechanism to prevent their contents blowing out and must be scavenger-proof to deter animals that may be attracted to the waste. The Contractor must ensure that all personnel immediately deposit all waste in the waste bins for removal by the Contractor. Bins must be emptied on a weekly basis and the waste removed to the construction camp where it must be properly contained in	Contractor, ECO	Monthly

Activity/Impact	Action Required	Responsible Party	Monitoring Frequency
	scavenger, water and windproof containers until disposed of. The bins must not be used for any purposes other than waste collection.		
	Ensure that no litter, refuse, wastes, rubbish, rubble, debris and builders waste generated on the premises be placed, dumped or deposited on adjacent/surrounding properties during or after the construction period of the project.	Contractor, ECO	Monthly
	If possible and feasible, all waste generated on site must be separated into glass, plastic, paper, metal and wood and recycled.	Contractor, ECO	Monthly
28. Hazardous waste management	The waste, resulting from the use of hazardous materials, must be disposed of at a registered hazardous waste disposal site by a certified waste disposal Contractor as approved by the ECO. A disposal certificate must be obtained from the disposal Contractor.	Contractor, ECO	As required
	Staff must be trained in the identification of hazardous waste.	Contractor, ECO	As required
	Temporary storage and disposal of hazardous waste is regulated by legislation which must be complied with, i.e. the Occupational Health and Safety Act.	Contractor, ECO	Monthly
29. Noise	The Contractor must aim to adhere to the relevant noise regulations and limit noise to within standard working hours.	Contractor, ECO	Monthly
	Construction site camp and other noisy facilities must be located well away from noise sensitive neighbours.	Contractor, ECO	Once-off
	Truck traffic must be routed away from noise sensitive areas, where possible.	Contractor, ECO	As required
	All noise and sounds generated must adhere to SABS 0103 specifications for maximum allowable noise levels for residential areas. No pure tone sirens or hooters may be utilised except where required in terms of SABS standards or in emergencies.	Contractor, ECO	Monthly
	Noisy operations must be combined so that they occur where possible at the same time.	Contractor, ECO	Monthly
	Construction activities must be contained to reasonable working hours. Night-time activities near noise sensitive receptors must not be allowed.	Contractor, ECO	Monthly
	With regard to unavoidable noisy construction activities, the Contractor must liaise with local residents to inform them of such events.	Contractor	As required
	As construction workers operate in a noisy environment, it must be ensured that their working conditions comply with the requirements of the Occupational Health and Safety Act (Act No 85 of 1993). Where necessary, ear protection gear must be worn.	Contractor, ECO, Health and Safety Officer	Monthly
	Noise suppression measures must be applied to all construction equipment where required. Construction equipment must be kept in good working order and where appropriate fitted with silencers which are kept in good working order. Should the vehicles or equipment not be in good working order, the Contractor may be instructed to remove the offending vehicle or machinery from site.	Contractor, ECO, Health and Safety Officer	Monthly
30. Worker health and safety	Safety measures, work procedures and first aid must be implemented on site.	Contractor, , Health and Safety Officer	Monthly
	A Health and Safety Plan in terms of the Occupational Health and Safety Act (Act No. 85 of 1993) must be drawn up to ensure worker safety.	Contractor, Health and Safety Officer	Once-off
	Workers must be thoroughly trained in using potentially dangerous equipment.	Contractor, Health and Safety Officer	As required

Activity/Impact	Action Required	Responsible Party	Monitoring Frequency
	Contractors must ensure that all equipment is maintained in a safe operating condition.	Contractor	Monthly
	A safety officer must be appointed.	Contractor	Once-off
	A record of health and safety incidents must be kept on site.	Contractor, , Health and Safety Officer	Monthly
	Any health and safety incidents must be reported to the project manager immediately.	Contractor, , Health and Safety Officer	As required
	First aid facilities must be available on site at all times. All incidents requiring first aid occurring on site must be recorded in the incidents book on site.	Contractor, , Health and Safety Officer	Monthly
	A record must be kept of medication administered or precautions taken and the time and dates when this was done. This can then be used as evidence in court should any claims be instituted against the Contractor.	Contractor, , Health and Safety Officer	Monthly
	Material stockpiles or stacks must be stable and well secured to avoid collapse and possible injury to site workers / local residents.	Contractor, ECO, Health and Safety Officer	Monthly
31. Personal Protective Equipment	Personal Protective Equipment (PPE) must be made available to all construction staff and must be compulsory. Hard hats and safety shoes must be worn at all times and other PPE worn were necessary i.e. dust masks, ear plugs etc.	Contractor, ECO, Health and Safety Officer	Monthly
	No person is to enter the portion of the site where construction activities are being undertaken without the necessary PPE.	Contractor, ECO, Health and Safety Officer	Monthly
	SABS Standards and specifications governing dangerous processes such as welding must be strictly applied, with a view to proper protection of the public and workers.	Contractor, ECO, Health and Safety Officer	As required
32. Fauna and Flora	Implement the eradication programme for invasive species in terms of the Conservation of Agricultural Resources Act (Act No. 43 of 1983).	Contractor, ECO	Monthly
	Institute the rehabilitation of areas as soon as construction activity allows it.	Contractor, ECO	As required
	No disturbance, capture or injury of any fauna will be permitted. Should any fauna be found on site it must be removed from site by the ECO or a suitably qualified person.	Contractor, ECO	Continuous

10.12. MONITORING, AUDITING AND REPORTING

The Developer **Acetech Infra Pty Ltd** is responsible for ensuring that all environmental management measures prescribed in this EMPr as well as any other conditions specified by the relevant authorities, are implemented and adhered to during all phases of the proposed development. The Applicant may delegate the responsibilities for implementing the requirements to other persons/entities, however the Applicant remains responsible for ensuring that the delegated responsibilities are carried out.

It is the responsibility of the project team or their delegate to ensure that regular monitoring of environmental issues addressed in this management plan is undertaken. The applicant is responsible for the monitoring of the infrastructure.

Site inspections to determine maintenance needs during the operational phase are imperative for good housekeeping.

Internal environmental audits must be undertaken at regular monthly intervals throughout the construction phase to ensure compliance.

The applicant will be responsible for maintaining a database of all records pertaining to the environment for the study area.

All incidents such as spills of toxic or any other substance that may negatively affect the environment must be reported to the relevant authorities.

FINES

The ECO can impose fines on the Contractor for any contraventions of this EMPR. The imposition of fines will enable the ECO to ensure that the requirements of the EMPR are taken seriously by the Contractor.

For an alternative method of ensuring Environmental Compliance, it should be considered that the ECO must issue a “Compliance Certificate” once a month. This certificate must be attached to the Contractor’s “Payment Certificate” and no Contractor will be paid without such a certificate. (Experience with this method of enforcement has proven very successful in the past.)

The Contractor shall be advised in writing of the nature of the infringement and the amount of the fine. The Contractor shall also take the necessary steps (e.g. training) to prevent a recurrence of the infringement.

The Contractor is also advised that the imposition of spot fines does not replace any legal proceedings the authorities, landowners and/or members of the public may institute against the Contractor.

In addition to the fine, the Contractor shall be required to make good any damage caused as a result of the infringement at his own expense.

11. SUMMARY OF THE FINDINGS AND RECOMMENDATIONS OF SPECIALISTS

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

11.1.1 Terms of Reference

An engineering geological investigation was conducted for the proposed development.

The investigation had the following aims:-

- to determine the mechanical properties of the soil underlying the area
- to describe and present fieldwork and laboratory testing carried out during investigations
- to assess the site geology and geotechnical characteristics of the subsoil material with respect to suitability and stability for the proposed development.
- to recommend sound and economical development practices and initial founding guidelines for design purpose based on geotechnical conditions encountered on site

11.1.2 Methodology

The subsurface conditions were evaluated by excavating three inspection pits using a TLB medium mechanical excavation) according to SABS 1200.Inspection pit was excavated on the centre of the proposed site and ensuring proper coverage of site. Excavations on site will be classified as soft to intermediate excavations according to SABS 1200 D criteria. Bulk earthworks can probably be done using conventional earth moving equipment's such as TLB and pneumatic rollers extensive heavy earthmoving equipment will not be necessary. Proper compaction was not done when backfilling the inspection pits and should the structure be placed along the sections proper compactions should be done to minimize differential settlement .Disturbed samples were collected selectively and submitted to the laboratory for further analysis and tests

SITE INVESTIGATION

The fieldwork done on the 24th May 2017 comprised the following activities

- An evaluation of the area at desktop level during which geological and topographical maps were sourced and assessed
- A subsurface geotechnical investigation comprising excavations, profiling and backfilling of inspection pits across the proposed development in order to establish the subsoil geology
- Logging of soil profiles(Appendix C) of this report
- Performance of Dynamic Penetrometer test(DCP) test on order to assess the approximate CBR of the in situ subsoils.The DCP tests are attached in this report(Appendix B)
- Sampling of various subsoil conditions encountered for laboratory testing at Nare National Laboratory in Mahikeng

The inspection pit and field test positions were determined using a hand held GPS accurate approximately 3m.The positions of the field testing are indicated on the DCP test attached in the appendix of this report. The study area is located at the following coordinates

- Latitude 25'51'24.0 S
- Longitude 25'39'21'05 E

Inspection pits

Naturally this area is covered with the thick layer of silty/colluviums sandy soil and clayey subsoil The sand seems to contain some pinholes which indicate they may be collapsible with the estimation of about 20mm collapsibility. The sandy material is due to the transportation by means of the natural causes e.g. wind and rain. The top sandy soils generally tend to be loose and could easily be excavated and a sample

was not taken. The soil profiling conducted during the investigations indicates that the underlain material constitutes of clayey horizons which is characterised by shattering and high expansive potential. The depths of natural material varied from (0.600-2.5), (0.700-2.2) and (0.800-2.2) respectively. During profiling the material showed consistency and constitutes of dark yellowish brown to light yellowish weathered granite and diabase gravelly materials.

The overlain transported soil horizon at inspection it 1 and 2 was not taken for sampling. Overlain sample was retrieved and taken at inspection pit 3 for indicator and grading analysis at Nare National Lab in Mahikeng.The subsoil exposed in the various pits were examined and logged by an Engineering Geologist familiar with the procedures of soil logging in terms of standard method for Soil and Rock Logging in South Africa recommended by Jennings, J.E Brink, A.B.A and Williams, A.A.B (1973).

Dynamic Cone PenetrometerTests
Three Dynamic Cone Penetrometer tests of undisturbed sample to 1m depth were conducted in the area under study to check the stability of the underlain material and to give indications of approximate Cbr values. The results of all the probes are represented graphically with figures as outlined in the report.

It is however evident that the overlain surface at an average is very soft and loose according to attached DCP tests done on field. Dcp refusal was not encountered during investigations

11.1.3 Recommendations and Conclusions

The site has been classified into one site class designation zone according to the NHBRC classification; namely **site class designation H/H1** defined by clayey horizon .

The purpose of this report is to provide a general overview of geotechnical conditions on the site, to guide decision-making as to the most appropriate foundation for the intended development A wide range of geotechnical conditions were evaluated in order to characterise the site into anticipated geotechnical zones Site investigations and laboratory test results indicate that the site is underlain mainly by highly active material.

The foundation option recommended for the said development is raft foundations. Remove unsuitable soil and replace with suitable material and compact to 95 % Mod Ashto dry density. Excavate footings to a depth of 0.8m.Alternatively we recommend strip foundation which will be more economical for the developer as mentioned above. The findings of geotechnical investigation indicates that the proposed site for development is suitable for the development provided all the guidelines are followed as outlined in the report. Areas of termite and other biotic activity were not visible but however should be done to prevent damage to structures due to differential settlements. The biotic activity is generally limited to the upper soil horizon. Fill should be place layers not exceeding 200mm.

Enough efforts are made during the field investigations to identify various soil horizons and identify problematic areas and it is impossible to guarantee isolated zones of hard rocks and problematic areas which could have been missed. During construction stage it is expected that a competent person to evaluate the variation which may occur.

It is recommended that the structural engineers calculate the best economical foundation option for the proposed development based on the type of development and different available construction methods

11.2 ECOLOGICAL HABITAT REPORT (SEE APPENDIX C)

Objectives of the habitat study

The objectives of the habitat study are to provide:

- A detailed fauna and flora habitat survey;

- A detailed habitat survey of possible threatened or localised plant species, vertebrates and invertebrates;
- Recording of possible host plants or food plants of fauna such as butterflies.
- Evaluate the conservation importance and significance of the site with special emphasis on the current status of threatened species;
- Literature investigation of possible species that may occur on site;
- Identification of potential ecological impacts on fauna and flora that could occur as a result of the development; and
- Make recommendations to reduce or minimise impacts, should the development be approved.

Scope of study

- Surveys to investigate key elements of habitats on the site, relevant to the conservation of fauna and flora.
- Recording of any sightings and/or evidence of existing fauna and flora.
- The selective and careful collecting of voucher specimens of invertebrates where deemed necessary.
- An evaluation of the conservation importance and significance of the site with special emphasis on the current status of threatened species.
- Recording of possible host plants or foodplants of fauna such as butterflies.
- Literature investigation of possible species that might occur on site.
- Integration of the literature investigation and field observations to identify potential ecological impacts that could occur as a result of the development.
- Integration of literature investigation and field observations to make recommendations to reduce or minimise impacts, should the development be approved.

Recommendations and Conclusions

- Vegetation at the site appears to be degraded, modified and in some areas where buildings have recently been constructed, transformed. Remaining vegetation has a conspicuous grass layer, some indigenous herbs, alien invasive weeds and mostly shrub-height Vachellia tortilis, Vachellia karroo and Ziziphus mucronata. Other indigenous woody species that are present are Searsia pyroides and Grewia flava. The alien invasive tree Melia azedarach also occurs at the site. Remains of the alien invasive Eucalyptus camaldulensis (Red Gum), a tree species that are widespread in the surrounding area, are found at the site. Indigenous grass species include Enneapogon cenchroides, Eragrostis rigidior, Panicum maximum, Aristida congesta, Cynodon dactylon, Eragrostis lehmanianna, Chloris virgata, Eragrostis superba, Heteropogon contortus and Tragus berteronianus. Indigenous forbs and dwarf shrubs include Gazania krebsiana, Bulbine narcissifolia, Barleria macrostegia, Chamaesyce inaquilatera, Felicia muricata, Pollichia campestris and Nidorella microcephala. Indigenous climbing herbs such as Merremia palmata and Pentarrhinum insipidum as well as the alien invasive climbing herb Ipomoea purpurea are conspicuous at parts of the site.
- Alien invasive weed species are visible at previously cleared and previously cultivated areas. These alien invasive weeds include Flaveria bidentis, Datura ferox, Argemone ochroleuca, Gomphrena celosioides, Schkuhria pinnata, Tagetes minuta, Conyza bonariensis, Verbena aristigera, Verbesina encelioides and Verbena aristigera.
- Wetlands and rocky ridges appear to be absent at the site.
- Grassland at the site is represented by the Klerksdorp Thornveld (Gh 13) which is not listed as a Threatened Ecosystem according to the National List of Threatened Ecosystems (2011).
- No Threatened or Near Threatened plant or animal species appear to be resident at the site. No other plant or animal species of particular conservation concern appear to be present at the site.
- The scope for the site to be part of a corridor of particular conservation importance is small.
- Ecological sensitivity at the site is low.

- Based on the present survey at the site and adjacent areas the ecological sensitivity of the area where the buildings have recently been constructed is likely to have been similar, low. There are no indications that the site where the buildings have recently been constructed would have contained sensitive ecosystems or sensitive species.
- Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are moderate or low.
- If the development is approved a key issue would be continued monitoring and eradication of alien invasive plant species. It is in particular alien invasive species such as Melia azedarach (Syringa) and invasive Prosopis glandulosa (Mesquite) which should not be allowed to establish.
- If the development is approved an opportunity presents itself to cultivate indigenous plant species which would benefit urban nature conservation.

11.3 HERITAGE IMPACT ASSESSMENT (HIA) (See Appendix D for a copy of this report)

11.3.1 Terms of Reference for Heritage Impact Assessment

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;

Legislative requirements of National Heritage Resources Act (NHRA), Act 25 of 1999

Aspects concerning the conservation of cultural resources are dealt with mainly in two acts. These are the National Heritage Resources Act (Act 25 of 1999) and the National Environmental Management Act (Act 107 of 1998).

The National Heritage Resources Act

According to the above-mentioned act the following is protected as cultural heritage resources:

a. Archaeological artifacts, structures and sites older than 100 years
b. Ethnographic art objects (e.g. prehistoric rock art) and ethnography
c. Objects of decorative and visual arts
d. Military objects, structures and sites older than 75 years
e. Historical objects, structures and sites older than 60 years
f. Proclaimed heritage sites
g. Grave yards and graves older than 60 years
h. Meteorites and fossils
i. Objects, structures and sites of scientific or technological value.

The National Estate includes the following:

a. Places, buildings, structures and equipment of cultural significance
b. Places to which oral traditions are attached or which are associated with living heritage
c. Historical settlements and townscapes
d. Landscapes and features of cultural significance
e. Geological sites of scientific or cultural importance
f. Sites of Archaeological and palaeontological importance
g. Graves and burial grounds
h. Sites of significance relating to the history of slavery
i. Movable objects (e.g. archaeological, palaeontological, meteorites, geological specimens, military, ethnographic, books etc.)

A Heritage Impact Assessment (HIA) is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources. An HIA must be done under the following circumstances:

a. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300m in length
b. The construction of a bridge or similar structure exceeding 50m in length
c. Any development or other activity that will change the character of a site and exceed 5 000m^2 or involve three or more existing erven or subdivisions thereof
d. Re-zoning of a site exceeding 10 000 m^2
e. Any other category provided for in the regulations of SAHRA or a provincial heritage authority

11.3.2 Recommendations and Conclusions

In conclusion it is possible to say that the Phase 1 HIA for the proposed Melrose Estate Development located in the Mafikeng Local Municipality of the North West Province was conducted successfully.

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. No sites, features or material of cultural heritage (archaeological and/or historical) origin or significance were identified in the study area during the physical assessment. If any sites did exist here in the past it would have been largely disturbed or destroyed by past historical and recent urban & housing related development activities in the study and larger area around it.

A section of the study and development area has already been developed and impacted by construction (housing & related) activities. Although sections of the area is still open no sites or material of cultural heritage origin were identified here as well.

Earlier aerial views of the specific study area shows that in 2001 it was still fairly open and undeveloped, but by 2017 large-scale ground clearance had commenced and the surrounding areas had been impacted as well by growing urban housing & other developments. It is therefore believed that if any sites, features or material of archaeological or historical nature did exist here in the past it would have been extensively disturbed or destroyed as result.

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 Melrose Estate development located in Mahikeng should be allowed to continue taking into consideration the mitigation measures put forward above.

12. CONCLUSIONS AND RECOMMENDATIONS

The Applicant, **Acetech Infra Pty Ltd,** is new in the property development game as this is their first development. Before they have purchased the property on which the development took place, they were informed by the seller, as well as Officials from the Local Municipality, that the only Authorization that will be needed will be approval from the Mahikeng Local Municipality. They were also informed that the piece of land is already zoned as Residential. In addition to this, the SG diagram was already registered as per the township and the pegging was done, so this gave them the impression that they had already done the required authorisations. They were also informed by previous employees at the municipalities' planning department that they do not require an EIA as their proposed development is for a residential development on an area already zoned for Residential development and is surrounded by residential area.

The Applicant only became aware of the fact that they might have commenced with the construction of Melrose Estates without an environmental authorization (as it is required in terms of Section 24 of the *National Environmental Management Act ,* 1998 (Act No.107 of 1998), hereinafter referred to as "NEMA" read with Section 24F of NEMA) during the site investigation conducted by an Environmental Management Inspector (EMI) of the Department of Economic Development, Environment, Conservation and Tourism ("DEDECT') on 10 November 2020 and the receipt of a Notice of intention to issue a compliance notice.

As soon as the applicant became aware that Environmental Authorization was required, AB Enviro-Consult was appointed to obtain the necessary authorizations.

This Chapter of the Report provides a summary of the findings of the 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.

Since the decommissioning of the Mafikeng Golf Course the site has been vacant. The land was being used as an illegal dumping site as well as a home-ground for a lot of other illegal activities creating a nuisance and risk for the surrounding neighbourhood. The formalization of this area into a residential area is welcomed by the community as these activities have stopped.

This is one of the first secured residential estate of its kind in Mafikeng. The only other one is Leopard Park which was done probably 30 years ago and it only offers stands for sale where the clients must build their own houses costing anywhere between 2.5mil-4mil. The development will be offering housing options within a varied price range. The development provides clients with a turnkey housing option within the secured environment.

Vegetation at the site is transformed at areas where buildings have been constructed. Remaining vegetation appears to be modified and degraded. Threatened animal and plant species, or any other animal or plant species of particular conservation concern appear to be absent at the site. Site is isolated mostly by urban surroundings and the scope for the site to be a corridor of particular conservation importance is small. The scope for the vegetation at the site to be restored and conserved is small.

Ecological sensitivity at the remaining vegetation at the site is low (Figure 3). Based on the present survey of adjacent areas and the remaining vegetation, the ecological sensitivity of the area where buildings have recently been constructed would probably have been low as well

In the National Framework for Sustainable Development (NFSD) it is stated that *"the achievement of sustainable development is not a once-off occurrence and its objectives cannot be achieved by a single action* or *decision. It is an ongoing* process *that requires* a *particular set of values and attitudes in which economic, social and environmental assets that society has at its disposal, are managed in* a *manner that sustains human well-being without compromising the ability of future generations to meet their own need.* The NFSD further continues to emphasize that South Africa's current development path in certain instances reflects signs of being unsustainable in the long-term. It highlights that a large percentage of growth in economic activity (measured in terms of its contribution to the GDP) is achieved by *"consuming' natural resources and degrading our habitat at accelerating rates with the inevitable consequence that future economic growth and development objectives will be prejudiced. "*

Consistent with national priorities, environmental authorities must support *"increased economic growth and promote social inclusion",* whilst ensuring that such growth is *"ecologically sustainable".* In the National Spatial Development Perspective (NSDP) it is highlighted that, to achieve the goal of stimulating sustainable economic activities and to create long-term employment opportunities, it is required that spending on economic infrastructure is focused in priority areas with potential for economic development, with development to serve the broader societies' needs equitably.

The local municipality is aware of the need to integrate urban settlements, with a view to reduce travel distances to the areas of employment opportunities. It also addresses measures to promote compact and connected growth opportunities, such as the identification of revitalisation zones, densification and mixed land use zones. For any development to be sustainable and viable, land development and planning should ensure that communities are located close to job opportunities, social facilities and **basic services**.

There is a definite need for the residents to have reasonable access to opportunities and facilities that supports living in the urban Settlement. It is the responsibility of the local municipality to ensure that the residents have reasonable access to community services and amenities, as well as employment opportunities and that the form of land development need to provide for basic needs in an affordable way. The proposed development will be in line with this principle by ensuring that people living in the area do in fact have reasonable access to opportunities and facilities.

Although the emphasis is on housing, complimentary land uses have been included in the township. People want easy access to job opportunities and shops and want their living environment to be placed at strategic positions with good access routes in close proximity to these amenities.

A mixed land use development is *socially responsible* based on the following:

- It covers the mixed and lower income bracket by providing a higher density housing option;
- The development will include retail and commercial activities;
- Commercial erven can accommodate a shopping centre, to service the existing formalised settlements in the area. The commercial node will:
    - Promote entrepreneurial services and products;
    - Be within walking distance to places of refreshment and trade for residents;
    - Provide Job opportunities; and
    - Improve neighbourhood quality

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

The alternatives considered for the proposed development includes “Mixed land use township” (Alternative 1), “Single land use: Housing only” (Alternative 2) and the “No-go option.

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.

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 Report 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 be authorized, 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. A full copy of the signed EA from DEDECT in terms of NEMA, granting approval for the development must be available on site
2. A copy of the EMPr as well as any amendments thereof must be available on site
3. A suitably qualified ECO must be appointed.
4. Impacts on the environment must be minimised during site establishment and the development footprint must be kept to the approved development area.
5. Vegetation clearing may not commence until such time as the development footprint has been clearly defined.
6. No clearance of vegetation outside of the development footprint may occur.
7. At the end of the construction phase the site and its surrounding area must be free from any pollution that originated as a result of the construction activities.
8. No disturbance of topsoil & subsoil may commence until such time as the development footprint has been clearly defined.
9. No disturbance of topsoil & subsoil outside of the development footprint may occur.
10. At the end of the construction phase the site and its surrounding area must be free from any chemical, fuel, oil and cement spills that originated as a result of the construction activities.
11. At the end of the construction phase the site and its surrounding area must be free from any sewage that originated as a result of the construction activities.
12. At the end of the construction phase the site and its surrounding area must be free from any hazardous or general waste pollution that originated as a result of the construction activities.
13. Dust prevention measures must be applied to minimise the generation of dust.
14. Noise prevention measures must be applied to minimise the generation of unnecessary noise pollution as a result of construction activities on site.
15. Absolutely no burning of waste is permitted.
16. Fires will only be allowed in facilities especially constructed for this purpose.
17. No hunting of animals will be allowed.
18. No intentional destruction of any sites, features or material of cultural heritage (archaeological and/or historical) origin or significance may occur.
19. All Contractors and sub-contractors must abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.
20. All Contractors and sub-contractors must abide to the rules and regulations of the Occupational Health and Safety Act, 85 of 1993.

13. AFFIRMATION BY EAP

I **Mr. J.P. de Villiers** 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:

Date:

Signature of the Commissioner of Oaths:

Date

Designation

Official stamp:

APPENDIX A.1:
APPROVAL FROM THE MAHIKENG LOCAL MUNICIPALITY FOR PHASE 1 OF THE DEVELOPMENT.

MAHIKENG LOCAL MUNICIPALITY

Municipal Manager and other Departments:
P/Bag X63
Mmabatho
2735
Tel.: (018) 389-0111
Fax: (018) 384-4830

Cnr University Drive &
Hector Peterson Road
Mmabatho, 2735

Ref: 6439-Maf

13 July 2018

Acetech Infra Pty Ltd
91 Molopo Road
Mafikeng
2745

Dear Sir/Madam.

SITE DEVELOPMENT PLAN APPROVAL FOR ERF 6439 MAFIKENG, EXTENSION 18.

I, refer to the Site Development Plan application submitted on 04 May 2018 and wish to advice that the application has been approved in terms of Section 35 (2) of the Spatial Planning and Land Use Management, 2013 (Act No. 16 of 2013), subject to the following conditions:

1. That building plans corresponding to the approved site development plan shall be submitted for approval and shall be approved prior to any building work being commenced with;
2. That Erf 9812 Mafikeng be rezoned to accommodate the clubhouse before construction thereof;
3. That no deviation from the approved site development plan shall be allowed, unless such deviation was approved beforehand, in writing, by the Mahikeng Local Municipality;
4. That the proposed development shall be developed within the erf boundaries according to the approved Surveyor General diagram and the boundary walls shall be shifted or moved according to this diagram if and when necessary;
5. That driveways and parking areas, as indicated on the approved site development plan shall be paved and maintained to the satisfaction of the Mahikeng Local Municipality;
6. That the applicant submits the storm water channel diagrams for municipal's consideration before construction can commence;
7. That all internal and external services, including the storm water discharge from the erf, shall be handled according to the approved site development plan;
8. That any cost relating to the upgrade of the existing bulk infrastructure to accommodate the development, shall be borne by the applicant/developer;

PLEASE ADDRESS ALL CORRESPONDENCE TO THE MUNICIPAL MANAGER

APPENDIX A.2
APPROVAL FROM THE MAHIKENG LOCAL MUNICIPALITY FOR PHASE OF THE DEVELOPMENT.

MAHIKENG LOCAL MUNICIPALITY

Municipal Manager and other Departments:
P/Bag X63
Mmabatho
2735
Tel: (018) 389-0111
Fax: (018) 38-4830

Cnr University Drive &
Hector Petersen Road
Mmabatho, 2735

MAHIKENG
LOCAL MUNICIPALITY
Diversity. Culture. Heritage

Ref: 6439-MAF/EXT18/PHASE-2

6th September 2020

Irfankhan
No. 80 Molopo Road
Mahikeng
2745

Dear Sir,

SITE DEVELOPMENT PLAN APPROVAL FOR PHASE 2 OF ERF 6439 MAFIKENG EXTENSION 18

I refer to the correspondence dated 1st September 2020 and wish to advise that the Land Development Officer on the 4th of September 2020 resolved in terms of Section 114 (a) of the Mahikeng Spatial Planning and Land Use Management By-law, 2018 that the Site Development Plan application for developing multiple dwelling units, be approved subject to the following conditions:

1. That building plans corresponding to the approved Site Development Plan be submitted in accordance with the National Building Regulations and Building Standards Act, 103 of 1977, for approval prior to any building work being commenced with;
2. That no deviation from the approved Site Development Plan shall be allowed, unless such deviation was approved beforehand, in writing, by the Mahikeng Local Municipality;
3. That the proposed development shall be within the erf boundaries according to the approved Surveyor General diagram;
4. That driveways and parking areas, as indicated on the approved Site Development Plan shall be paved and maintained to the satisfaction of the Mahikeng Local Municipality.

Kindly note that you have the right to appeal against the above decision in terms of Section 142 of the Mahikeng Spatial Planning and Land Use Management By-law, 2018. Should you wish to exercise this right, please note that the appeal should be in writing within 21 days of the date on notification, fully motivated and addressed to the Municipal Manager: Private Bag X63, Mmabatho, 2735.

Yours Faithfully,

MR N. M. MOKGWAMME
MUNICIPAL MANAGER

BATHO PELE

PLEASE ADDRESS ALL CORRESPONDENCE TO THE MUNICIPAL MANAGER

APPENDIX A.3
CONFIRMATION FROM THE MAHIKENG LOCAL MUNICIPALITY REGARDING THE AVAILABILITY OF BULK WATER AND BULK SEWER

MAHIKENG LOCAL MUNICIPALITY

MAHIKENG
LOCAL MUNICIPALITY
Diversity. Culture . Heritage.

Municipal Manager and other Departments:

Private Bag X 63
MMABATHO
2735

Cnr. University Drive &
Hector Peterson Road
MMABATHO
2735

Tel. No. (018) 389-0111
Fax No. (018) 384-4830

TO : THE MANAGER – MELROSE ESTATE

FROM : ACTING MUNICIPAL MANAGER – M. MOLAMU

DATE : 12 SEPTEMBER 2018

CONFIRMATION OF WATER & SEWER BULK SERVICES AT MELROSE ESTATES – ERVEN 9142 TO 9231 MAFIKENG, CNR. TILLARD & QUICKELY STREET

This letter serves to confirm that a request for the confirmation of bulk water & sanitation services has been received and given necessary attention.

Mahikeng Local Municipality (MLM) is responsible for the provision of water and sanitation services to its urban community, which includes the installation of new water meters and sewer connections for the clients for the new developments in the urban area.

To execute the abovementioned responsibility, MLM – Water & Sanitation Superintendents and Technician went onsite to conduct an inspection in conjunction with Melrose Estate's Technicians to confirm that the bulk services onsite are installed according to the required description and council's specifications.

This letter serves to confirm that the bulk services (80mm water meters & a bulk sewer connection) onsite are installed according to the required description and council's specifications (see attached Works Inspection Report signed by MLM & Melrose Estate's representatives)

Kind regards

M. MOLAMU
ACTING MUNICIPAL MANAGER

munman@mafikeng.gov.za

MAHIKENG LOCAL MUNICIPALITY
INFRASTRUCTURE DIRECTORATE
WATER & SANITATION SUB-DIRECTORATE

WORKS INSPECTION REPORT

CONFIRMATION OF WATER & SEWER BULK SERVICES AT MELROSE ESTATES – ERVEN 9142 TO 9231 MAFIKENG, EXTENSITON 18

DATE	WORKS DESCRIPTION
11 Sept. 2018	**BULK WATER SERVICES** A bulk water meter (size 80mm) has been properly installed by Mahikeng Local Municipality (MLM), which is sufficient for the provision of water reticulation service to the entire community of Melrose Estate.
11 Sept. 2018	**BULK SEWER SERVICES** A bulk sewer connection has been provided by Mahikeng Local Municipality (MLM), which is sufficient for the provision of sewer reticulation services to the entire community of Melrose Estate.

I CERTIFY THAT THE INTERNAL WATER & SEWER RETICULATION HAS BEEN CARRIED OUT ACCORDING TO THE REQUIRED DESCRIPTION AND COUNCIL'S SPECIFICATION

NAME OF MLM'S WATER SERVICE INSPECTOR: Ernest Tawetsile

SIGNATURE OF THE MLM'S REPRESENTATIVE:

SANITATION SERVICE INSPECTOR: Jacob Makgale

SIGNATURE OF THE MLM'S REPRESENTATIVE:

NAME OF THE MELROSE ESTATE'S REPRESENTATIVE: SHWETA MEHTA

SIGNATURE OF THE MELROSE ESTATE'S REPRESENTATIVE:

12/09/2018

I. MONAISA

MANAGER – WATER & SANITATION

APPENDIX B:
GEO-TECHNICAL REPORT

APPENDIX C:
ECOLOGICAL HABITAT REPORT

APPENDIX D:
HERITAGE IMPACT ASSESSMENT (HIA)