

Environmental Impact Assessment
Draft Environmental Impact Assessment Report



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INDIGENOUS VEGETATION CLEARANCE AND TOWNSHIP
DEVELOPMENT ON
PORTIONS 127 & 128 ELANDSHEUVEL 402 IP
FLIMIEDA EXT 3

Ref NWP/EIA/54/2020

City of Matlosana Municipality

North West Province

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Table of Contents

1	INTRODUCTION	9
1.1	Background	9
1.2	Approach to the Environmental Impact Assessment Process	10
1.2.1	Scoping Phase (Completed)	10
1.2.2	Environmental Impact Assessment Phase	12
1.3	Content and Structure of the EIA Report	13
2	DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER	16
2.1	Legislative requirements for environmental assessment practitioners	16
2.2	Details of the expertise of relevant Environmental Assessment Practitioner	17
3	LOCALITY AND NATURE OF ACTIVITY	18
3.1	Project Locality and Extent	18
3.2	Description of activity	21
3.3	Civil Services and Infrastructure	23
3.3.1	Civil Services.....	23
3.3.2	Infrastructure.....	26
4	NEED AND DESIRABILITY	26
5	LEGAL FRAMEWORK	32
5.1	The Constitution of South Africa (No. 108 of 1996)	32
5.2	The National Environmental Management Act (No. 107 of 1998).....	32
5.3	The National Water Act (No. 36 of 1998).....	33
5.4	National Environmental Management Biodiversity Act (No. 10 of 2004)	35
5.5	National Environmental Management Air Quality Act (No. 39 of 2004).....	35
5.6	The National Environmental Management Waste Act (No. 59 of 2008).....	36
5.7	National Heritage Resources Act (No. 25 of 1999)	36
5.8	Relevant guidelines	37
6	DESCRIPTION OF RECEIVING ENVIRONMENT	38
6.1	Physical Environment	38
6.1.1	Climate	38
6.1.2	Topography and drainage	38
6.1.3	Geology and Soils.....	38
6.2	BIOLOGICAL ENVIRONMENT.....	39
6.2.1	Ecological Fauna and Flora Habitat	39
6.3	SOCIAL ENVIRONMENT	43
6.3.1	Social and land use characteristics.....	43
6.3.2	Heritage and Cultural Value	44

7	PROJECT ALTERNATIVES	45
8	PUBLIC PARTICIPATION PROCESS.....	51
8.1	Public Participation Activities Undertaken during the Scoping Phase.....	53
8.2	Public Participation Activities Undertaken during the EIA Phase.....	54
9	ENVIRONMENTAL IMPACT ASSESSMENT	55
9.1	Introduction	55
9.2	Impact Assessment Methodology.....	55
9.3	Impacts	58
9.3.1	Geology Impacts.....	58
9.3.2	Topographical Impacts	59
9.3.3	Hydrology Impacts	60
9.3.4	Vegetation and Fauna Impacts.....	61
9.3.5	Waste Impacts.....	62
9.3.6	Air Quality Impacts.....	64
9.3.7	Noise Impacts.....	65
9.3.8	Heritage Impacts	66
9.3.9	Traffic Impacts.....	66
9.3.10	Socio-Economic Impacts	67
9.4	Comparative Assessment of Alternatives.....	71
10	ENVIRONMENTAL IMPACT STATEMENT.....	73
10.1	Conclusions	73
10.2	Recommendations	73
10.3	Proposed Duration of Environmental Authorisation	73
10.4	Assumptions, Uncertainties and Gaps In Knowledge	74

FIGURES

Figure 1:	Locality Map
Figure 2:	Locality Map – open street map
Figure 3:	Locality Map – imagery map
Figure 4:	Land Uses
Figure 5:	Geotechnical Map
Figure 6:	Ecological Sensitivity Map
Figure 7:	Watercourse buffers
Figure 8:	Heritage Resources

TABLES

Table 1:	Report Structure
Table 2:	EAP Details and Experience
Table 3:	Criteria to be used for rating of impacts
Table 4:	Criteria for the rating of classified impacts

Table 5:	Summary of Impact Assessment After Mitigation
Table 6:	Comparative assessment of Layout Alternatives after mitigation
Table 7:	Comparative assessment of Scheduling Alternatives after mitigation

APPENDICES

APPENDIX A: SITE LAYOUT PLANS

APPENDIX B: PHOTOGRAPHS

APPENDIX C: PUBLIC PARTICIPATION INFORMATION

APPENDIX D: SERVICE LETTERS FROM MUNICIPALITY

APPENDIX E: SPECIALIST REPORTS

- 1 *Ecological Fauna & Flora Habitat Survey*
- 2 *Heritage Impact Assessment*
- 3 *Civil Services Report*
- 4 *Electrical Services Report*
- 5 *Traffic Impact Study*
- 6 *Geotechnical Report*
- 7 *Flood line Report*

APPENDIX F: Environmental Management Programme

APPENDIX G: OTHER INFORMATION

- 1 *Details and expertise of EAP and declaration of interest*
- 2 *Details and Expertise of Specialists and Declaration of Interest*
- 3 *DEA Screening Tool*
- 4 *Confirmation of process*
- 5 *Appointment of EAP*

ACRONYMS

CBA	Critical Biodiversity Area
DEDECT	Department of Economic Development, Environment, Conservation and Tourism
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act, 1989 (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMPr	Environmental Management Programme
ESA	Ecological Support Area
FSR	Final Scoping Report
IDP	Integrated Development Plan
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IEM	Integrated Environmental Management
LUDS	Land Use Development Support
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NEMAQA	National Environment Management: Air Quality Act (No.39 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
NPAES	National Protected Areas Expansion Strategy
NWA	National Water Act (Act 36 of 1998)
NW DEDECT	North West Department of Economic Development, Environment, Conservation and Tourism
PES	Present Ecological State
PPP	Public Participation Process
PoS	EIA Plan of Study for Environmental Impact Assessment
SDF	Spatial Development Framework
SR	Scoping Report
SAHRA	South African Heritage Resources Agency

GLOSSARY OF TERMS

Activity (Development) – an action either planned or existing that may result in environmental impacts through pollution or resource use.

Alternative – a possible course of action, in place of another, of achieving the same desired goal of the proposed project. Alternatives can refer to any of the following but are not limited to: site alternatives, site layout alternatives, design or technology alternatives, process alternatives or a no-go alternative. All reasonable alternatives must be rigorously explored and objectively evaluated.

Applicant – the project proponent or developer responsible for submitting an environmental application to the relevant environmental authority for environmental authorisation.

Biodiversity – the diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.

Construction – means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

Cumulative Impacts – impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities to produce a greater impact or different impacts.

Direct impacts – impacts that are caused directly by the activity and generally occur at the same time and at the same place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally quantifiable.

Ecosystem – a dynamic system of plant, animal (including humans) and micro-organism communities and their non-living physical environment interacting as a functional unit. The basic structural unit of the biosphere, ecosystems are characterised by interdependent interaction between the component species and their physical surroundings. Each ecosystem occupies a space in which macro-scale conditions and interactions are relatively homogenous.

Environment – In terms of the National Environmental Management Act (NEMA) (Act No 107 of 1998) (as amended), “Environment” means the surroundings within which humans exist and that are made up of:

- a) the land, water and atmosphere of the earth;
- b) micro-organisms, plants and animal life;
- c) any part or combination of (i) of (ii) and the interrelationships among and between them; and
- d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Assessment (EA) – the generic term for all forms of environmental assessment for projects, plans, programmes or policies and includes methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.

Environmental Authorisation – an authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.

Environmental Assessment Practitioner – the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental

management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.

Environmental Impact – a change to the environment (biophysical, social and/ or economic), whether adverse or beneficial, wholly or partially, resulting from an organisations, activities, products or services.

Environmental Impact Assessment (EIA) – the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

Environmental Issue – a concern raised by a stakeholder, interested or affected parties about an existing or perceived environmental impact of an activity.

Environmental Management - ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental Management Programme - A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life cycle of a project. This EMP focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

Expansion - means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Fatal Flaw – issue or conflict (real or perceived) that could result in developments being rejected or stopped.

General Waste – household water, construction rubble, garden waste and certain dry industrial and commercial waste which does not pose an immediate threat to man or the environment.

Hazardous Waste – waste that may cause ill health or increase mortality in humans, flora and fauna.

Indirect impacts – indirect or induced changes that may occur as a result of the activity. These types of impacts include all of the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Integrated Environmental Management – a philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision-making process. The IEM philosophy (and principles) is interpreted as applying to the planning, assessment, implementation and management of any proposal (project, plan, programme or policy) or activity – at local, national and international level - that has a potentially significant effect on the environment. Implementation of this philosophy relies on the selection and application of appropriate tools for a particular proposal or activity. These may include environmental assessment tools (such as strategic environmental assessment and risk assessment), environmental management tools (such as monitoring, auditing and reporting) and decision-making tools (such as multi-criteria decision support systems or advisory councils).

Mitigate – the implementation of practical measures designed to avoid, reduce or remedy adverse impacts or enhance beneficial impacts of an action.

No-Go Option – in this instance the proposed activity would not take place, and the resulting environmental effects from taking no action are compared with the effects of permitting the proposed activity to go forward.

Open Space – environmentally sensitive areas which are not suitable for development and consist of watercourses, buffers, floodplains, steep slopes, sensitive biodiversity and/or areas of cultural or heritage significance.

Registered interested and affected party – in relation to an application, means an interested and affected party whose name is recorded in the register opened for that application in terms of regulation 42 of the 2014 EIA Regulations.

Rehabilitation – a measure aimed at reinstating an ecosystem to its original function and state (or as close as possible to its original function and state) following activities that have disrupted those functions.

Scoping – the process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addresses in an environmental assessment. The main purpose of scoping is to focus the environmental assessment on a manageable number of important questions. Scoping should also ensure that only significant issues and reasonable alternatives are examined.

Sensitive environment – any environment identified as being sensitive to the impacts of the development.

Significance – significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. magnitude, intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgments and science-based criteria (i.e. biophysical, social and economic).

Stakeholder engagement – the process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities.

Sustainable Development – development which meets the needs of current generations without hindering future generations from meeting their own needs.

Watercourse – means:

- a) a river or spring;
- b) a natural channel or depression in which water flows regularly or intermittently;
- c) a wetland, lake or dam into which, or from which, water flows; and
- d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks.

Wetland – means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

1 INTRODUCTION

1.1 Background

In order to address specific developmental needs within the jurisdiction of the City of Matlosana Municipality, Nova Investments (Pty) Ltd, Lafle Beleggings (Pty) Ltd & MSPJ Investments (Pty) Ltd intends to obtain environmental authorisation for indigenous vegetation clearance and township development on 182,5314 hectares on Portions 127 & 128 of the farm Elandheuvell 402 IP, City of Matlosana Municipality, Dr Kenneth Kaunda District Municipality, North West Province.

The development implies the following:

1. The clearance of an area of twenty hectares or more of indigenous vegetation (Listing Notice 2, Activity No. 15 of the 2014 EIA Regulations as amended).
2. The development of – (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs
 - (a) within a water course; or (c) if no development setback line exists, within 32 metres of a water course, measured from the edge of a water course (Listing Notice 1, Activity No. 12ii (a&c) of the 2014 EIA Regulations as amended).
3. The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grid, pebbles or rock of more than 10 m³ from a water course (Listing Notice 1, Activity No. 19 of the 2014 EIA Regulations as amended).
4. Residential, mixed, retail, commercial, industrial or institutional development where such land was used for agriculture on or after 1 April 1998 where such development will occur inside an urban area, when the total land to be developed is bigger than 5 hectares (Listing Notice 1, Activity No. 28ii of the 2014 EIA Regulations as amended).
5. The clearance of an area of 300 square metres or more of indigenous vegetation within critical biodiversity areas identified in bioregional plans (Listing Notice 3 Activity No. 12(h)iv of the 2014 EIA Regulations as amended).
6. The development of a road wider than 4 metres with a reserve less than 13,5 metres. North West: (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority (Listing Notice 3 Activity No. 4(iv)).

The development qualifies as a listed activity in terms of Section 15 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014 (as amended), and environmental authorisation needs to be obtained. It is also stated in Government Notice No. R. 326 dated 7 April 2017 (as amended) that ... “The investigation, assessment and communication of the potential impact of activities must follow the procedure as prescribed in regulations 21 to 24 of the Environmental Impact Assessment Regulations of 2014 as amended (Regulation No. R. 326 of 7 April 2017). This procedure refers to application subject to scoping and environmental impact reporting.

Section 12 (1) of Government Notice 326 dated 7 April 2017 (as amended) stipulates that: “Before submitting an application for environmental authorisation, an applicant must appoint an EAP at own cost to manage the application”. To this extent the applicant appointed Envirovision Consulting CC (CK2003/050777/23) as environmental assessment practitioner to administer the application.

Section 21 of Government Notice No. R. 326 of 7 April 2017 provides for the preparation and submission of a scoping report to the competent authority for consideration. The Final Scoping Report submitted by “Envirovision Consulting CC” on 28 January 2021 was accepted by the Department of Economic Development, Environment, Conservation and Tourism (DEDECT), North West Provincial Government, on 19 February 2021. The applicant notified the department on 30 May 2021 that the EIAR will be submitted within 156 days of the acceptance of the Scoping Report. The applicant failed to submit the required EIAR within the regulated timeframe (31 July 2021) which resulted in the application to lapse.

Subsequent to the receipt of correspondence from a newly appointed EAP, the Department have noted and considered the exceptional circumstances that could have led to the lapsing of the application. In this regard, the decision taken by the Department to deem the application as having lapsed on 25 August 2021 was rescinded. In order for the Department to reconsider this application, the following documents must be submitted to the Department:

- Proof of appointment of new Environmental Assessment Practitioner (EAP)
- Signed declaration of interest from the new EAP.

(Extract from letter dated 04 April 2022, from DEDECT, Environmental Quality Management, Sub-Directorate: Development Impact Management). (Refer to attachments G4 Correspondence from Mr. Robert Nemanashi, NW DEDECT and G5 Appointment of new EAP).

Subsequently the above documentation was submitted to the Department.

The Draft EIAR is hereby submitted to the Department and all Interested and Affected Parties for a public participation process of 30 days.

1.2 Approach to the Environmental Impact Assessment Process

NW DEDECT is the lead authority for this Environmental Impact Assessment (EIA) process and the development needs to be authorised by this Department in accordance with the National Environmental Management Act 107 of 1998 (NEMA) (as amended).

The required environmental process to be followed is being undertaken in two phases:

- Phase 1: Scoping Phase (Completed)
Scoping Report (SR) including Plan of Study for EIA
- Phase 2: EIA Phase
Environmental Impact Assessment Report (EIAR) and Environmental Management Programme (EMPr)

1.2.1 Scoping Phase (Completed)

The SR provided a description of the receiving environment and how the environment may be affected by the proposed development. Desktop studies making use of existing information were used to highlight and assist in the identification of potential significant impacts (both biophysical and social) associated with the proposed project.

Additional issues for consideration were extracted from feedback from the public participation process, which commenced at the beginning of the Scoping Phase, and will continue throughout the duration of the project. All issues identified during this phase of the study were documented

within the SR. Thus, the SR provided a record of all issues identified as well as any fatal flaws, in order to make recommendations regarding the project and further studies required to be undertaken within the EIA phase of the proposed project.

The Final Scoping Report (FSR) was approved by NW DEDECT on 19 February 2021. The letter of acceptance authorised the applicant to proceed with undertaking the EIA for the proposed cemetery development, in accordance with the tasks outlined in the Plan of Study for Environmental Impact Assessment. Specific additional conditions were listed in the acceptance letter.

NW DEDECT requested the following information to be addressed in detail in the EIA Phase of the project:

1. The project description must be amended to include details of the proposed development components/facets (i.e. total number of stands/erf, land uses envisaged, type of houses etc.) The description of the project must correlate with the layout plan of the proposed development.
2. A detailed layout plan that indicates all components of the proposed development must be submitted. Sensitive areas such as the wetland/river identified within the proposed development site must be indicated on the layout plan including the recommended buffer zones.
3. The scoping report indicates that bulk services such as water supply, electricity reticulation, sewage and refuse removal will be provided by City of Matlosana. In this regard, the municipality must be consulted to confirm the availability of infrastructure capacity to service the proposed development.
Refer to Section 3.3.1 and Appendix D for confirmation of services provision.
4. In addition to all specialist studies identified in the Scoping Report, a geotechnical study must also be undertaken to establish geological conditions of the site and to recommend appropriate mitigation measures. All specialist studies identified in the Scoping Report must be included in EIAR.
Refer to Sections 6.1.3 and Appendix E for all specialist reports.
5. Declaration of Interest forms (original forms) must be completed by all specialists who compiled specialist reports. All declarations must be done on the official forms obtainable from the Department.
Refer to Appendix G for the declaration forms.
6. Detailed mitigation measures for all identified impacts must be presented in the EIAR and the Draft EMPr.
Refer to Section 9 Environmental Impact Assessment and Appendix F, EMPr.
7. Comments from the Department of Agriculture regarding loss of agricultural land should be solicited and submitted.
To be included in the FBAR.

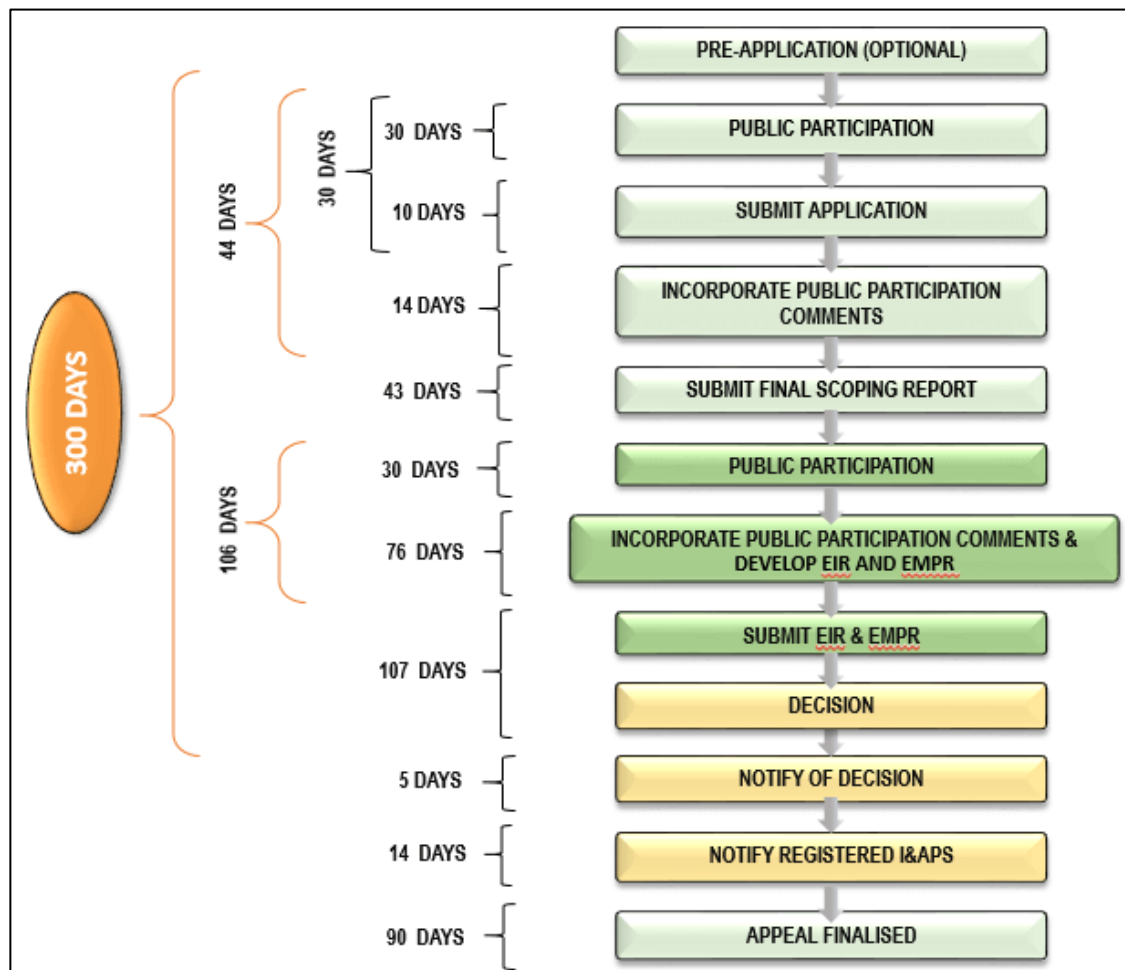
8. The EIAR which includes all specialist studies undertaken must be made available to all registered interested and affected parties (I&AP) for comments, including all organs of state which have a jurisdiction over certain aspects of the proposed development.
Refer to Appendix E for the Specialist Studies and to Section 8.2 for details of the Public Participation Process during the EIA Phase. The DEIAR is available for review to all I&APs.

1.2.2 Environmental Impact Assessment Phase

The EIAR has aimed to achieve the following:

- to provide an overall assessment of the biophysical and social environments of the affected area;
- to undertake a detailed assessment of the preferred site/alternatives in terms of environmental criteria including the rating of significant impacts;
- to identify and recommend appropriate mitigation measures (to be included in an EMPr) for potentially significant environmental impacts; and
- to undertake a fully inclusive public participation process to ensure that I&AP issues and concerns are recorded and commented on and addressed in the EIA process.

The EIA process is represented diagrammatically in the Schedule below:



1.3 Content and Structure of the EIA Report

This report represents the Draft EIAR and was compiled in accordance with Government Notice No. R. 326 of 7 April 2017, Appendix 2(1). In terms of Government Notice No. R. 326 of 7 April 2017, Appendix 2(1) an EIAR must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include—

(a) details of—

- the EAP who prepared the report; and
- the expertise of the EAP, including a curriculum vitae;

(b) the location of the development footprint of the activity on the approved site as contemplated in the accepted scoping report, including:

- the 21 digit Surveyor General code of each cadastral land parcel;
- where available, the physical address and farm name; and
- where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

(c) a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is—

- a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;
- on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

(d) a description of the scope of the proposed activity, including—

- all listed and specified activities triggered and being applied for; and
- a description of the associated structures and infrastructure related to the development;

(e) a description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;

(f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report;

(g) a motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;

(h) a full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including:

- details of the development footprint alternatives considered;
- details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;

- a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;
- the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—
 - can be reversed;
 - may cause irreplaceable loss of resources; and
 - can be avoided, managed or mitigated;
- the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;
- positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- the possible mitigation measures that could be applied and level of residual risk;
- if no alternative development footprints for the activity were investigated, the motivation for not considering such; and
- a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;

(i) a full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including—

- a description of all environmental issues and risks that were identified during the environmental impact assessment process; and
- an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;

(j) an assessment of each identified potentially significant impact and risk, including—

- cumulative impacts;
- the nature, significance and consequences of the impact and risk;
- the extent and duration of the impact and risk;
- the probability of the impact and risk occurring;
- the degree to which the impact and risk can be reversed;
- the degree to which the impact and risk may cause irreplaceable loss of resources; and
- the degree to which the impact and risk can be mitigated;

(k) where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;

(l) an environmental impact statement which contains—

- a summary of the key findings of the environmental impact assessment;
- a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred

development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and

- a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

(m) based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;

(n) the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;

(o) any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;

(p) a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;

(q) a reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;

(r) where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;

(s) an undertaking under oath or affirmation by the EAP in relation to

- the correctness of the information provided in the reports;
- the inclusion of comments and inputs from stakeholders and I&APs;
- the inclusion of inputs and recommendations from the specialist reports where relevant; and
- any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;

(t) where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;

(u) an indication of any deviation from the approved scoping report, including the plan of study, including–

- any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and
- a motivation for the deviation;

(v) any specific information that may be required by the competent authority; and

(w) any other matters required in terms of section 24(4)(a) and (b) of the Act.

This report has been structured to comply with the format required by the NEMA. The contents are as follows:

TABLE 1: REPORT STRUCTURE

SECTION	CONTENT
SECTION 1 Introduction	Introduction and background to the project.
SECTION 2 Details of EAP	Presents information regarding the EAP involved in the proposed project.
SECTION 3 Locality and nature of the project	Provides detailed information regarding the proposed project and associated required infrastructure.
SECTION 4 Project motivation	Presents the need and desirability of the proposed project.
SECTION 5 Legal framework	Includes an explanation on all applicable legislation.
SECTION 6 Receiving environment	Provides the baseline information of the biophysical and social environments being impacted by the development proposal. Key findings of the specialist studies conducted.
SECTION 7 Project Alternatives	Consideration of alternatives (locality, land use, layout, designs, energy uses and No-Go) for the project.
SECTION 8 Public participation process	Provides an overview of the Public Participation Process conducted to date.
SECTION 9 Environmental Impact Assessment	The impacts identified are rated by significance.
SECTION 10 Environmental Impact Statement	Conclusions and recommendations of the Environmental Impact Assessment.

2 DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

2.1 Legislative requirements for environmental assessment practitioners

Section 13 of Government Notice No. R. 326 of 7 April 2017 provides the following requirements for environmental assessment practitioners (EAPs):

- An EAP must be independent;
- An EAP must have expertise in conducting environmental impact assessments or undertake specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the activity.
- An EAP must ensure compliance with these Regulations;
- An EAP must perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;

- An EAP must take into account, to the extent possible, the matters referred to in regulation 18 of Government Notice No. R. 326 of 7 April 2017 when preparing the application and any report, plan or document relating to the application; and
- An EAP must disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in the possession of the EAP and, where applicable, the specialist, that reasonably has or may have the potential of influencing –
 - any decision to be taken with respect to the application by the competent authority in terms of these Regulations; or
 - the objectivity of any report, plan or document to be prepared by the EAP or specialist in terms of these Regulations for submission to the competent authority.

2.2 Details of the expertise of relevant Environmental Assessment Practitioner

The members of Setala Environmental have combined expertise and a proven track record of initiating and completing major projects. We have experience of more than 20 years in EIA applications. In order for the company to meet the emerging environmental challenges, Setala has assembled a team of professionals, consisting of a core of environmental experts with extensive experience in environmental assessments. The team includes environmentalists, various specialists, and public participation experts. A range of township development as well as linear projects including water pipelines and power lines, agricultural development have been successfully completed over the years as indicated in our Experience Record.

Areas of expertise:

- Environmental Impact Assessment (EIA)
- Strategic Environmental Assessments (SEA)
- Environmental Compliance (incl. ECO)
- Public participation
- Specialist studies (Fauna, Flora, Avifauna, Wetland)
- Water related expertise and services i.e. Water Use Licence Applications, Integrated Water and Waste Management Plans, water use, and water quality assessments.

Refer to Table 2 and Appendix G for EAP details and experience.

TABLE 2: EAP DETAILS AND EXPERIENCE

Company	Setala Environmental (Pty) Ltd
Contact Persons	Ria Pretorius
Postal Address	44 Melrose Blvd, Melrose Arch Johannesburg, 2196
Telephone	082 568 6344
Facsimile	086 675 4026
E-mail	ria@setalaenvironmental.co.za
Qualification	Masters Degree in Environmental and Research Psychology
Professional Registrations	A registered professional Environmental Assessment Practitioner with EAPASA, with Registration number 2019/1908. Member of the Environmental Law Association (ELA). Membership number : 2016/104/GP.

	Member of the International Association for Impact Assessment South Africa (IAIASa). Membership Number: 3168.
Experience	Ria Pretorius has 18 years' experience in the Environmental Sector and has gained experience as Environmental Assessment Practitioner and Project Manager working on a wide range of projects including residential, mixed land-use, industrial, roads, electrical infrastructure and filling stations. Her primary skills include Environmental Screening Assessments, Environmental Impact Assessments (EIAs), Public Participation and Environmental Management Programmes (EMPrs).

Setala Environmental as well as the EAP has no vested interest in the proposed development and hereby declares its independence as required by the EIA Regulations.

3 LOCALITY AND NATURE OF ACTIVITY

3.1 Project Locality and Extent

This impact assessment is done in support of a new township application for Flimieda X3 on Portions 127 and 128 of the Farm Elandsheuvel 402-IP in Klerksdorp, City of Matlosana. The application site is situated north of Chris Hani Road (R30), west of Von Wielligh Avenue, in the north-west of Klerksdorp.

21 Digit Surveyor General codes

TOIP00000000040200127
 TOIP00000000040200128

Physical address

Von Wielligh Street, Flimieda, Klerksdorp.

Farm name

Portions 127 and 128 of the Farm Elandsheuvel 402-IP, City of Matlosana.

Coordinates of the centre of the activity (Hartebeesthoek 94, WGS84)

26°49'27.08" South;
 26°38'26.39" East



9 February 2022

Legend

- | | | |
|---|--|--|
|  Site Area | Cadastre |  Public Place |
|  EIA Application Development Footprint |  Erven | |
|  EIA Application Site |  Farm Portion | |
|  National Jurisdiction Area |  Farm | |
| |  Agri Holding | |

0 1.25 2.5 km
 Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

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Figure 1: Locality map DEA Screening Tool

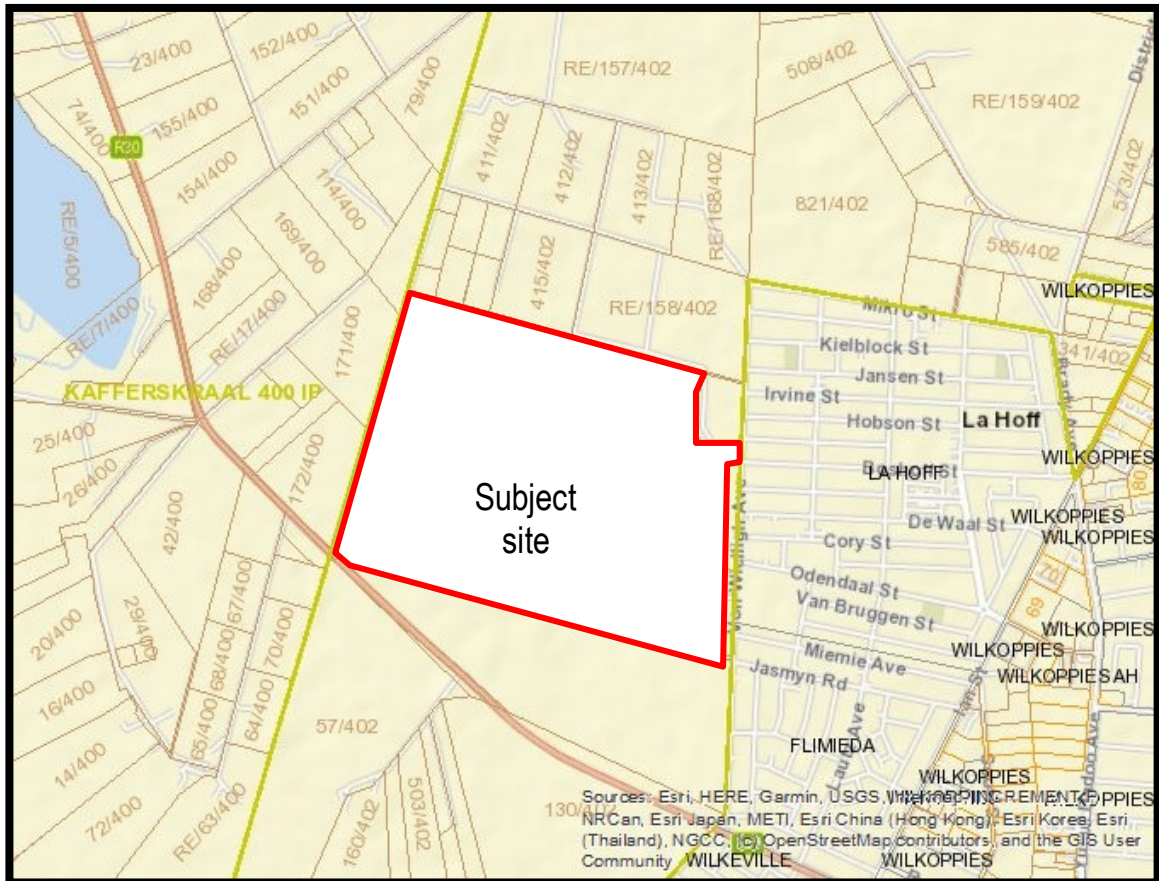


Figure 2: Cadastral map of subject site and surrounding properties (Office of the Surveyor General)



Figure 3: Locality Map (Source: Office of the Chief Surveyor-General) – imagery map

An extract of the relevant 1:50 000 topographical map indicating the development site has been included as *Appendix A1* to this report.

3.2 Description of activity

This Environmental application for Flimieda X3 is on Portions 127 and 128 of the Farm Elandsheuel 402-IP in Klerksdorp, City of Matlosana. The application site is situated north of Chris Hani Road (R30), west of Von Wielligh Avenue, in the north-west of Klerksdorp.

All listed and specified activities triggered and being applied for

1. The clearance of an area of twenty hectares or more of indigenous vegetation (Listing Notice 2, Activity No. 15 of the 2014 EIA Regulations as amended).
2. The development of – (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs
 - a. within a water course; or (c) if no development setback line exists, within 32 metres of a water course, measured from the edge of a water course (Listing Notice 1, Activity No. 12ii (a&c) of the 2014 EIA Regulations as amended).
3. The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grid, pebbles or rock of more than 10 m³ from a water course (Listing Notice 1, Activity No. 19 of the 2014 EIA Regulations as amended).
4. Residential, mixed, retail, commercial, industrial or institutional development where such land was used for agriculture on or after 1 April 1998 where such development will occur inside an urban area, when the total land to be developed is bigger than 5 hectares (Listing Notice 1, Activity No. 28ii of the 2014 EIA Regulations as amended).
5. The clearance of an area of 300 square metres or more of indigenous vegetation within critical biodiversity areas identified in bioregional plans (Listing Notice 3 Activity No. 12(h)iv of the 2014 EIA Regulations as amended).
6. The development of a road wider than 4 metres with a reserve less than 13,5 metres. North West: (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority (Listing Notice 3 Activity No. 4(iv)).

Project type and description of the activity

The activity comprises township establishment consisting of a mixed land use model with residential, business, institutional and open space uses (Refer to *Appendix A1*).

A mixed-use development is planned which will comprise of ± 2616 residential erven, ± 6 low-income housing erven (BMG & CRU), three primary schools, two secondary schools, a college, an old age home, a medical centre and 2 clinics, and business erven.

Total property size: 182.5314 hectares.

Refer to the land use table below for more detailed information.

LEGEND		LEGENDE		
LAND USE/GRONDGEBRUIKE		Number Erven Aantal Erwe	Area in Ha Area in Ha	% of Area % van Area
Residential (300m ² Erven)		1667	53,0387	29,0573
Residential (400m ² Erven)		949	40,9260	22,4213
BMG		3	6,0909	3,3368
GRU		3	6,0892	3,3360
Business / Besigheid		10	5,0698	2,7775
Church / Kerk		6	1,0293	0,5639
Creche		10	1,3995	0,7667
Primary School		3	8,3208	4,5586
Secondary School		2	8,9412	4,8984
College		1	1,6245	0,8900
Clinic		2	0,2726	0,1493
Medical Centre		1	0,5744	0,3147
House		2	4,6950	2,5722
Taxi Rank		3	0,5766	0,3159
Old Age Home		1	3,1057	1,7015
Post Office/Police/Fire Station/Library		4	0,7679	0,4207
Community Hall		1	0,3805	0,2085
Recreational		1	1,6182	0,8855
Park		2	38,0106	20,8241
TOTAL/TOTAAL		2671	182,5314	100,0000

Figure 4: Land Uses

Sector classification

The activity conforms to the following sector classifications as identified in the national electronic register:

Sector 8: Greenfield transformation to urban or industrial form; and
Sector 10: Township development

3.3 Civil Services and Infrastructure

3.3.1 Civil Services

The following information has been extracted from the Services Report undertaken by Mhiduve (Pty) Ltd. Refer to Appendix E3.

Water

The design of the internal water reticulation system will be such that it will accommodate the ultimate demands as anticipated in the table below. The total annual average daily demands for the development are and design peak flows are indicated in the table below.

Zoning as per Layout	No of Erf/Units	Erf Size	Demand	Daily Flow MI	ee	% ee	Peak	Weighted	Peak Demand ML
Residential (300m ² Erven)	1837	56.50	900	1.6533	1653.3	0.4531	4.4	1.994	84.196
Residential (400m ² Erven)	1036	42.94	900	0.9324	932.4	0.2556	5	1.278	53.958
BMG(100 units/Ha with 50% coverage)	304.645	6.09	900	0.2741805	274.1805	0.0751	8.5	0.639	26.974
CRU (100 units/Ha with 50% coverage)	304.46	6.09	900	0.274014	274.014	0.0751	8.5	0.638	26.957
Business (400 per 100m ²)(FAR 0.8 Bus 2)	9	5.27	400/100m ²	0.1685536	168.5536	0.0462	9.5	0.439	18.533
Church (2000 l/day per erf)	6	1.09	2kl	0.012	12	0.0033	18	0.059	2.500
Creche (= < 2Ha, 15kl)	9	1.08	15kl	0.015	15	0.0041	17	0.070	2.951
Primary School (>2ha =< 10ha , 12.5kl/day)	3	8.32	12.5kl	0.0125	12.5	0.0034	18	0.062	2.604
Secondary School (>2ha =< 10ha , 12.5kl/day)	2	8.94	12.5kl	0.0125	12.5	0.0034	18	0.062	2.604
College (= < 2Ha, 15kl)	1	1.62	15kl	0.015	15	0.0041	17	0.070	2.951
Clinic Medical Centre (500 per 100m ² FAR 0.6)	2	0.27	500/100m ²	0.008178	8.178	0.0022	25	0.056	2.366
Medical Centre (500 per 100m ² FAR 0.6)	1	0.57	500/100m ²	0.017232	17.232	0.0047	19	0.090	3.789
Filling Station (Bus 1, 400 per 100m ² FAR 0.7)	2	0.39	400/100m ²	0.01092	10.92	0.0030	22	0.066	2.781
Taxi Rank (Bus 1, 400 per 100m ² FAR 1)	3	0.55	400/100m ²	0.021988	21.988	0.0060	18	0.108	4.581
Old Age Home (40 units/ha coverage 50%)	62.114	3.11	900	0.0559026	55.9026	0.0153	13	0.199	8.411
Post Office/Police/Fire Station/Library (400/100m ²)	4	0.72	400/100m ²	0.028936	28.936	0.0079	16	0.127	5.359
Community Hall (400 per 100m ²)	1	0.40	400/100m ²	0.016044	16.044	0.0044	19	0.084	3.528
Recreational (400 per 100m ² FAR 1)	1	1.43	400/100m ²	0.057044	57.044	0.0156	13	0.203	8.583
House (<25 units/ha FAR 0.5)	58.6875	4.70	900	0.05281875	52.81875	0.0145	12	0.174	7.336
Park (developed)(>10ha , 10kl/day)	2	28.76	10kl	0.01	10	0.0027	18.5	0.051	2.141
Total		178.8428		3.6485	3648.511	1		6.467	273.105

The water demand criteria used for the calculation of pipe sizes are as follows:

- Average daily demand (ADD) -3.6485 MI
- Peak factor -6.467
- Fire risk -moderate
- Fire flow criteria -8 l/s @ 0.7 hours
- Storage Reservoir -Yes
- Storage Capacity -7,3 ML (48hrs)

Water reticulation

It is proposed that a storage reservoir be constructed within the development (location to be identified) and supplied with water by the municipalities bulk water supply system. The location of the municipalities' bulk water system is still being investigated and will be incorporated into the final draft of the services report. The storage reservoir will have a storage capacity of 48hr i.e. 7,3ML.

The client Mphona Civils has indicated that bulk engineering services around the development are present. Furthermore, the City of Matlosana has also indicated that the current bulk line around the property will be upgraded to a 700mm dia line.

The internal reticulation will consist of 110mm dia, 90mm dia and 75mm dia Class 9 HDPE pipes as per the detailed hydraulic design to be completed.

After construction and connection of the water reticulation network to the municipal main, it will be taken over and managed by the City of Matlosana Local Municipality.

Stormwater

The development is situated on land with a slope between 0.7% to 2.6%. This will lead to low flow velocities with very little erosion of the in-situ soils. The drainage system will be designed and constructed to minimize the impact of the development on the stormwater characteristics of the property.

The stormwater system will be designed for a 1:5 year recurrence interval for minor floods and 1:25 year recurrence interval for major floods.

The design standards proposed are:

- Kerbed, surfaced roads to accommodate 1:5 year return period stormwater runoff.
- Kerb Inlets and an underground stormwater system to accommodate the 1:25 year return period stormwater runoff
- Erosion protection and stabilization of erodible areas and associated sedimentation control.

Sewer

Internal sewerage disposal of the development will be handled by means of an underground uPVC pipe network. Pipe sizes will be as per the hydraulic engineering design with all relevant elements including manholes, erf connections, etc. to the specification of the local authority.

There exists a bulk sewer line that intersects the development. The size of the line is being investigated. Once information on the size of the bulk line is available it will be incorporated into the final draft of the bulk services report.

Klerksdorp Waste Water Treatment Plant has an estimated 7ML to 8ML daily flow capacity available. This is enough to accommodate the 3.585ML daily flow expected from the development. The City of Matlosana plans on upgrading the existing 375mm- 1200mm diameter sewer bulk line, bulk contributions from the development will assist in this regard. After construction of the sewerage network system, The City of Matlosana LM will take over, operate and maintain these services.

The Swart street pumpstation will need to be assessed in order to determine its efficiency in handling additional flow from the development. Assessment of the swart street pumpstation will form part of the final draft of the bulk services report.

Solid waste

All solid waste will be accommodated within a designated refuse area and collected by the City of Matlosana Local Municipality to be disposed of at the municipal waste disposal site.

Refer to Appendix D for correspondence from City of Matlosana LM.

Electricity

The following information has been extracted from the Electrical Services Report undertaken by DM Consulting engineers. Refer to Appendix E4.

Bulk Supply

The developments fall within City of Matlosana Municipality supplied area 132/11kV, 20MVA substation, located near Manzilpark. City of Matlosana Municipality has built a new substation near Manzilpark that will supply Matlosana Smart City which will open up capacity for new developments and existing growth. Initial talks indicated that this capacity can be available based on the development expecting to be fully build and occupied in a certain timeframe.

MV Reticulation

Electrical capacity will be created for the development by way of a 11kV Medium Voltage (MV) overhead (OH) network running from Manzilpark (Main Substation) 132/11kV substation through the development and forming a ring.

The bulk application will be divided in 35MVA capacity. Phase 1, 2 & 3 required in 2022. Phase 4 additional 5MVA for Phase 4, 5 & 6 in 2025. (The final timeframe is not determined)

The 11kV MV overhead network will make use of ACSR Aluminum Conductor type mounted on 11m concrete or wooded poles. The detail design will determine the conductor size in order to comply with thermal and voltage drop limits.

LV Reticulation

Pole-top transformers will create capacity and electricity will be distributed throughout the development by way of an 400V Low Voltage (LV) overhead (OH) network forming in radial network configuration.

This LV overhead network will make use of Arial Bundle Conductor (ABC) type as per SANS 1418 and mounted on 9m wooded poles. The detail design will determine the conductor size in order to comply with thermal and voltage drop limits.

Service connections

Low Voltage (LV) service connections will be provided to each stand from a pole top box with the installation of an underground (UG) 10/16mm², 3 Core, PVC/SWA/PVC/PVC, Cu 1mm² x 2 Comms or overhead (OH) 10/16mm² Airdac SNE type cable.

3.3.2 Infrastructure

The following information has been extracted from the Traffic Impact Study Report undertaken by TECHWORLD (Pty) Ltd. Refer to Appendix E5.

A mixed-use development is planned which will comprise, from a critical trip generation viewpoint, of ±2990 single dwelling units, ±1218 low-income housing units (BMG & CRU), three primary schools with ±1800 students, two secondary schools with ±2000 students, a college with ±800 students, an old age home with ±124 units, ±3400 m² GLA for medical clinics, and ±31600 m² GLA for business and retail purposes.

The expected trip generation of the application is ±5078 primary vehicle trips during the weekday morning (AM) peak hour and ±4429 primary vehicle trips during the weekday afternoon (PM) peak hour (based on COTO TMH 17, the South African Trip Data Manual).

The required road improvements are as follows:

- The upgrading of Chris Hani Road from a two-lane to a four-lane single carriageway road between planned Road A and Ian Street.
- The construction (extension) of Boshoff Street and Jasmyn Road towards the west as two-lane single carriageway roads.
- The construction of Roads A, B and C and the other internal roads as two-lane single carriageway roads.
- The implementation of 6X traffic signals at the intersections of Von Wielligh Ave / Chris Hani Rd (INT 1), Lautz Ave / Chris Hani Rd (INT 6), Dr Yusuf Dadoo Ave / Boshoff St (INT 9), Road A / Jasmyn Rd (INT 11), Road A / Chris Hani Rd (INT 12) and Boshoff St / Chris Hani Rd (INT 18).
- The updating of signal timing plans and the coordination of signalized intersections along Chris Hani Road (Intersections 18, 12, 1, 6 and 7).
- The construction of 8X single lane roundabouts at the intersections of Von Wielligh Ave / Jasmyn Rd (INT 2), Von Wielligh Ave / Boshoff St (INT 3), Lautz Ave / Boshoff St (INT 4), Lautz Ave / Jasmyn Rd (INT 5), Road A / Boshoff St (INT 10), Road B / Boshoff St (INT 13), Road B / Jasmyn Rd (INT 14) and Jasmyn Rd / Boshoff St (INT 15).
- The construction of 4X bus / taxi loading facilities on both sides of Chris Hani Road, downstream of the intersections with Boshoff Street and Road A. The construction of two taxi ranks along Boshoff Street is also planned in the township.
- The construction of paved sidewalks, 1.8m wide, is required along all the Class 4 roads in the township, and along Road A and Boshoff Street up to Chris Hani Road.

4 NEED AND DESIRABILITY

Government Notice No. 792 of 5 October 2012 provides information and guidance for applicants, authorities and interested and affected parties on requirements for the consideration of need and desirability in terms of the National Environmental Management Act, 2008 (Act No. 107 of 2008), the Environmental Impact Assessment Regulations, the Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004) and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008).

The table below has been compiled and completed in order to present information on the need and desirability of the proposed development in accordance with the information requirements laid down in Government Notice No. 792 of 5 October 2012.

1. Is the activity permitted in terms of the property's existing land use rights?	YES	NO X	Please explain
The activity site is currently zoned "Agriculture". The activity <i>inter alia</i> represents township development and a Land Development Approval application needs to be lodged with, and granted by the City of Matlosana Municipality irrespective of an environmental authorisation being granted or not.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES X	NO	Please explain
According to the North West Spatial Development Framework (Appendix 16) the activity is situated within a "Primary Regional Centre". The proposed activity does not contradict the land uses envisaged for these zones.			
(b) Urban edge / Edge of Built environment for the area	YES X	NO	Please explain
The proposed activity is situated within the "urban edge" of the City of Matlosana Municipality.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES X	NO	Please explain
The relevant Integrated Development Plan (IDP) and Spatial Development Framework (SDF) do not preclude the proposed activity on the proposed activity site subject to a successful Land Development Application consisting of the subdivision and amendment of the Klerksdorp Land Use Management Scheme, 2005 and for the simultaneous removal of restrictive title conditions in relation to the Property, and a successful application in terms of Sections 41(2)(b),(d) and (e) of the Spatial Planning and Land Use Management Act (SPLUMA), Act 16 of 2013, read with Sections 62(1), 63(2), 67(1), 94(1)(a), 95(1) and 96 of the City Council of Matlosana Spatial Planning and Land Use Management By-law, 2016, read with Section 56 (1)(b)(i) of the Town Planning and Township Ordinance (Transvaal), 1986(Ordinance 15 of 1986), read with Section 18 of the Ordinance on the Subdivision of Land, 1986 (Ordinance 20 of 1986) and/or such other legislation, policy or by-law that may be applicable.			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
Not applicable.			
(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES X	NO	Please explain
An EMF could not be located for purposes of this assessment.			
(f) Any other Plans (e.g. Guide Plan)	YES	NO X	Please explain
Not applicable.			

<p>3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>If the required Land Development Approval application is to be approved it will serve as indication that the proposed development can be aligned with the projects and programmes identified as priorities within the credible IDP within the intended timeframes.</p>			
<p>4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>A need for a strategically placed mixed land use development within the City of Matlosana Municipality's Urban Edge has been identified by the applicant.</p>			
<p>5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development.</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The location of the subject site within the Urban Edge presupposes the availability of engineering services. The adequacy of services for the proposed development will receive consideration during the prescribed EIA process.</p>			
<p>6. Is this development provided for in the infrastructure planning of the municipality, and if not what will be the implication on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The activity is situated within the Urban Edge" that presupposes the prioritisation of infrastructure planning and services provisioning.</p>			
<p>7. Is this project part of a national programme to address an issue of national concern or importance?</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The project will lead to job creation, both during construction and operation as provided for in the 2030 National Development Plan.</p>			
<p>8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>
<p>The subject site is located within the relevant Urban Edge.</p>			
<p>9. Is the development the best practicable environmental option for this land/site?</p>	<p>YES X</p>	<p>NO</p>	<p>Please explain</p>

<p>Yes. The subject site represents the establishment of a mixed land use development within the Urban Edge. Furthermore, the activity site is favourably and strategically located for purposes of the proposed activity due to the following considerations:</p> <ul style="list-style-type: none"> • It is strategically well placed within the Urban Edge; • It is located next to existing developments (Flimieda X1 and X2). • Large parts of the subject site have been subjected to biological degradation over an extended period of time due to past cultivation and construction activities; and • According to the North West Spatial Development Framework (Appendix 16) the activity is situated within a "Primary Regional Centre". The proposed activity does not contradict the landuses envisaged for these zones. <p>The proposed activity thus represents the best practicable environmental option for this site in that it represents the utilisation of ecologically degraded land for economical gain and socio-economic spin-offs such as job generation and economic empowerment.</p>			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES X	NO	Please explain
Kindly refer to <i>Section 8.5: Impact and risk identification and assessment</i> of this report.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES	NO X	Please explain
The activity site is located next to existing developments (Flimieda X1 and X2).			
12. Will any person's rights be negatively affected by the proposed activity/ies?	YES	NO X	Please explain
No evidence was recorded during the prescribed public participation process that any person's rights will be negatively affected by the proposed activity.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	YES	NO X	Please explain
The subject site is situated within the relevant Urban Edge.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES	NO X	Please explain
The proposed activity will not as such contribute towards any of the SIPS			
15. What will the benefits be to society in general and to the local communities?			Please explain
<ul style="list-style-type: none"> • According to the National Development Plan, 11 million jobs must be created in South Africa in the next 15 years (2030). The approval of this application can contribute towards the achievement of this goal. • If approved, the applicant's investment in the activity will also stimulate economic activity for other local businesses. The value of such an investment in terms of local economic development, should not be underestimated. • The municipality will also benefit from the proposed change of land use, because the zoning and value of the property will increase which may result in potentially higher rates and taxes. 			
16. Any other need and desirability considerations related to the proposed activity?			Please explain
No.			

17. How does the project fit into the National Development Plan for 2030?	Please explain
It is expected that the project will lead to job creation, both during construction and operation.	

18. Please describe how the general objectives of Integrated Environmental Management as set out in Section 23 of NEMA as amended have been taken into account.
This report encompasses the general objectives and requirements of Integrated Environmental Management as set out in section 23 of NEMA.
19. Please describe how the principles of environmental management as set out in Section 2 of NEMA as amended have been taken into account.
<p>People and their needs have been placed at the forefront of this assessment by taking into account the impact of the proposed activity on their physical, psychological, developmental, cultural and social interests.</p> <p>The assessment took into account the proposed development's social, environmental and economic sustainability by <i>inter alia</i> avoiding or minimising and remedying the following if and where applicable:</p> <ul style="list-style-type: none"> • The disturbance of ecosystems, loss of biological diversity and pollution and degradation of the environment (development within an ecologically degraded and increasingly isolated area with no environmentally sensitive features); • Pollution and degradation of the environment (e.g. the specification of SABS approved infrastructure that should not interfere with the groundwater regime); • 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 (e.g. ensuring that no structures or resources with historical value will be affected by appointing a heritage consultant to assess potential impacts); • Waste (refer to accountable waste management proposals in the EMPr). • The use of non-renewable natural resources (e.g. energy saving technology alternatives); and • Negative impacts on the environment and on people's environmental rights by assessing potentially negative impacts in the selection of preferred alternatives. <p>The assessment also followed a risk-averse and cautious approach, which takes into account the limits of current knowledge about the consequences of decisions and actions as is reflected in the opinion of the EAP in this report as well as <i>Chapter 10.4: Assumptions, Uncertainties and Gaps in Knowledge</i> of this report.</p> <p>It has been acknowledged in the assessment 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 /alternative. The following environmental components were subsequently described and assessed in this report:</p> <ul style="list-style-type: none"> • Economic • Social • Cultural • Physical (land, water & atmosphere) • Biological (micro-organisms, plant & animal life) <p>Environmental justice has been pursued in that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons. This has been achieved by ensuring that the proposed activity should not lead to adverse environmental impacts.</p>

Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being has been pursued and special measures have been taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.

Responsibility for the environmental health and safety consequences of the activity throughout its life cycle is being described and assigned in the relevant EMPr .

The participation of all interested and affected parties in environmental governance has been promoted during the prescribed public participation process described elsewhere in the report.

Recommendations in the report has been informed by the outcome of the public participation process including the articulated interests, needs and values of all interested and affected parties if and where applicable.

The social, economic and environmental impacts of activities, including disadvantages and benefits, have been considered, assessed and evaluated in the report based on specialist input if and where applicable, and decisions are deemed appropriate in the light of such consideration and assessment.

The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers is being respected and protected in inter alia the relevant EMPr.

The regulatory requirement to notify registered Interested and Affected Parties of the (Record of) Decision and the placement of information within the public domain guarantee transparency and access to information.

Intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment has been promoted by keeping governmental stakeholders informed on the process and providing them with draft reports. In addition, great care has been taken to ensure that the activity conforms to spatial planning initiatives at different tiers of government for the area in question.

It is being understood that actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.

The assessment was also conducted with the underlying understanding that 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.

The relevant EMPr ensures that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.

5 LEGAL FRAMEWORK

5.1 The Constitution of South Africa (No. 108 of 1996)

Since 1994, South African legislation (including environmental legislation), has undergone a significant transformation and various laws and policies were promulgated with a strong emphasis on environmental concerns and the need for sustainable development. The Constitution of South Africa (No. 108 of 1996) (The Constitution) provides environmental rights (contained in the Bill of Rights, Chapter 2 (section 24)) and includes implications for environmental management. The environmental rights are guaranteed in section 24 of the Constitution, and states that:

“Everyone has the right –

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

To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:

- i. Prevent pollution and ecological degradation;
- ii. Promote conservation; and
- iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

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

5.2 The National Environmental Management Act (No. 107 of 1998)

The NEMA is South Africa’s overarching environmental legislation and has, as its primary objective, to provide for co-operative governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state and to provide for matters connected therewith. The NEMA provides for the Constitutional right to an environment that is not harmful to the health and well-being of South African citizens, the equitable distribution of natural resources, sustainable development, environmental protection and the formulation of environmental management frameworks.

In terms of the NEMA the Minister of the Department of Forestry, Fisheries and the Environment (DFFE) may identify activities which may not commence without prior authorisation from the Minister or member of the Executive Committee (MEC) and may also identify geographical areas in which specified activities may not commence without prior

authorisation from the Minister or MEC. The Minister of the DFFE thus published GNR 983 (Listing Notice 1), 984 (Listing Notice 2), 985 (Listing Notice 3) and 986 (Listing Notice 4) (4 December 2014) listing activities that may not commence prior to authorisation from the Minister or MEC. These Regulations have been amended on 7 April 2017. Listing Notice 1 (as amended) identifies activities that require a Basic Assessment (BA) process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 (as amended) identifies activities that require a S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 (as amended) identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity.

A detailed analysis was undertaken of the listed activities contained in Listing Notices 1, 2, & 3 (as amended) in order to ascertain which of the project components trigger any listed activities. The result of the analysis indicated that the respective project components implies the following listed activities:

1. The clearance of an area of twenty hectares or more of indigenous vegetation (Listing Notice 2, Activity No. 15 of the 2014 EIA Regulations as amended).
2. The development of – (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs
(a) within a water course; or (c) if no development setback line exists, within 32 metres of a water course, measured from the edge of a water course (Listing Notice 1, Activity No. 12ii (a&c) of the 2014 EIA Regulations as amended).
3. The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grid, pebbles or rock of more than 10 m³ from a water course (Listing Notice 1, Activity No. 19 of the 2014 EIA Regulations as amended).
4. Residential, mixed, retail, commercial, industrial or institutional development where such land was used for agriculture on or after 1 April 1998 where such development will occur inside an urban area, when the total land to be developed is bigger than 5 hectares (Listing Notice 1, Activity No. 28ii of the 2014 EIA Regulations as amended).
5. The clearance of an area of 300 square metres or more of indigenous vegetation within critical biodiversity areas identified in bioregional plans (Listing Notice 3 Activity No. 12(h)iv of the 2014 EIA Regulations as amended).
6. The development of a road wider than 4 metres with a reserve less than 13,5 metres. North West: (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority (Listing Notice 3 Activity No. 4(iv)).

The proposed activity therefore requires environmental authorisation by means of a full scoping and environmental impact reporting process.

5.3 The National Water Act (No. 36 of 1998)

The NWA provides for fundamental reformation of legislation relating to water resources and use. The preamble to the NWA recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's

water resources in the interests of all water users. In terms of the NWA, the national government, acting through the Minister of the DWS, is the public trustee of South Africa's water resources, and must ensure that water is protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all persons. The Minister of the DFFE is responsible to ensure that water is allocated equitably and used beneficially in the public interest, while promoting environmental values. The national government, acting through the Minister of the DWS, has the power to regulate the use, flow and control of all water in South Africa.

The majority of the provisions of the NWA came into effect on 1 October 1998 and at the same time various provisions of the Water Act (No. 54 of 1956) (WA) were repealed. The remaining provisions of the NWA commenced on 1st January 1999 and 1 October 1999 (and the remaining provisions of the WA were repealed).

The most fundamental departure from the WA is the removal of the concept of water as private property. Instead, water will be made available through user licences, which may be issued for a maximum period of forty years, subject to renewal. A priority of users has been established for the allocation of licences, with the environment near the top of the list.

Section 21 of the NWA indicates that "water use includes":

- Taking water from a water resource;
- Storing water;
- Impeding or diverting the flow of water in a water course;
- Engaging in a stream flow reduction activity referred to in section 36;
- Engaging in a controlled activity which has either been declared as such or is identified in section 37(1);
- Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;
- Disposing of waste in a manner which may detrimentally impact a water resource;
- Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
- Altering the bed, banks, course or characteristics of a water course;
- Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and
- Using water for recreational purposes.

Specified water uses, in section 21 of the NWA, must be licensed unless listed in Schedule 1; the continuation of an existing lawful water use; is permissible under a general authorisation issued under section 39 of the NWA, or if a responsible authority waives the need for a license.

The Department of Water and Sanitation has been notified and the Draft EIAR will be submitted to the Dept for comment.

Should any water uses requiring registration or licencing in terms of the Act be identified the necessary licencing application processes in this regard will be initiated by the applicant once environmental authorisation has been obtained.

5.4 National Environmental Management Biodiversity Act (No. 10 of 2004)

The National Environmental Management Biodiversity Act (No. 10 of 2004) (NEM:BA), aims to legally provide for biodiversity conservation, sustainable use and equitable access and benefit sharing. The NEM:BA creates a basic legal framework for the formation of a national biodiversity strategy and action plan and the identification of biodiversity hotspots and bio-regions which will then be given legal recognition. The NEM:BA imposes obligations on landowners (state or private) governing alien invasive species as well as regulating the introduction of genetically modified organisms. The South African National Biodiversity Institute (SANBI) was established to enforce the objectives as set out in the NEM:BA.

It is the finding of this report that the National Environmental Management Biodiversity Act (No. 10 of 2004) (NEM:BA) does not apply.

It needs to be recorded that certain portions of the subject site fall within critical biodiversity areas.

5.5 National Environmental Management Air Quality Act (No. 39 of 2004)

The National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM:AQA) allows for national, provincial and local air quality standards to be established as well as the declaration of priority areas. In addition the NEM:AQA requires that Air Quality Management Plans (AQMP) form part of the environmental implementation plan or environmental management plans to be prepared by national departments or the province as required by Chapter 3 of the NEMA. Furthermore the NEM:AQA requires municipalities to include an AQMP into its integrated development plan (IDP).

Key features of the NEM:AQA include:

- A decentralisation of air quality management responsibilities;
- The identification and quantification of significant emission sources that then need to be addressed;
- The development of ambient air quality targets as goals for driving emission reductions;
- The use of source-based (command-and-control) measures in addition to alternative measures, including market incentives and disincentives, voluntary programmes, and education and awareness;
- The promotion of cost-optimised mitigation and management measures;
- Air quality management planning by authorities, and emission reduction and management planning by sources; and
- Access to information and public consultation.

The overall objectives of the NEM: AQA include the following:

- The protection of the environment by providing reasonable measures for the protection of the quality of the air in the country;

- Protection of the environment by the prevention of air pollution and ecological degradation;
- Protecting the environment by securing ecologically sustainable development while promoting justifiable economic and social development; and
- To give effect to the constitution in order to enhance the quality of ambient air in order to secure an environment that is not harmful to the health and well-being of the people of South Africa.

The NEM:AQA requires the Minister of the DFFE to publish a list of activities which results in atmospheric emissions which may have a detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions, ecological conditions or cultural heritage. The NEM:AQA requires that an Atmospheric Emissions Licence (AEL) be obtained for such listed activities. Such a list of activities was published in GNR 248 (31 March 2010).

Following a detailed analysis of the proposed project against the activities listed in GNR 248, it was concluded that these activities will not be triggered.

5.6 The National Environmental Management Waste Act (No. 59 of 2008)

The National Environmental Management: Waste Act (No. 59 of 2008 (NEM:WA) serves to reform the law regulating waste management in order to protect human health and the environment. This is managed by providing reasonable measures for the prevention of pollution and ecological degradation. The NEM:WA aims to secure ecologically sustainable development while promoting justifiable economic and social development. The NEM:WA provides national norms and standards for regulating the management of waste by all spheres of government, for specific waste management measures and for matters incidental thereto. In terms of the NEM:WA the Minister of the DFFE may publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. Furthermore, the NEM:WA prohibits any person to commence, undertake or conduct a waste management activity except in accordance with the requirements or standards determined in terms of the NEM:WA for that activity or where a waste management licence (WML) has been issued in respect of that activity.

Following a detailed analysis of the proposed project, it was concluded that the proposed project components will not trigger any activity that will require an application for a WML based on the understanding that waste generated by the activity will feed into the municipal waste stream.

5.7 National Heritage Resources Act (No. 25 of 1999)

The National Heritage Resources Act (No. 25 of 1999) (NHRA) aims to protect heritage resources of national significance. The South African Heritage Resources Agency (SAHRA) was thus established in 1999 to fulfil the objectives of the NHRA. In terms of section 38 of the NHRA a heritage impact assessment (HIA) is required for any development or other activity which will change the character of the site:

- Exceeding 5 000m² in extent;
- Involving three or more existing erven or subdivisions thereof;
- Involving three or more erven or divisions thereof which have been consolidated within the past five years;
- The costs of which will exceed a sum set in terms of regulations by the SAHRA or a provincial heritage resource authority;
- The re-zoning of a site exceeding 10 000m² in extent;
- Any other category of development provided for in regulations by the SAHRA is a provincial heritage resource agency, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

The proposed project implies the following in terms of section 38 of the NHRA, thus an HIA is required:

- It will change the character of a site exceeding 5 000m² in extent;
- It may require the rezoning of a site exceeding 10 000m² in extent.

5.8 Relevant guidelines

- The Guideline Document EIA Regulations (DEAT 1998)
- Overview of Integrated Environmental Management, Information Series 0 (DEAT 2004a)
- Screening, Integrated Environmental Management, Information Series 1 (DEAT 2002)
- Scoping, Integrated Environmental Management, Information Series 2, (DEAT 2002a)
- Stakeholder Engagement, Integrated Environmental Management, Information Series 3 (DEAT 2002b)
- Specialist Studies, Information Series 4. (DEAT 2002c)
- Impact Significance, Integrated Environmental Management, Information Series 5 (DEAT 2002d)
- Ecological Risk Assessment, Integrated Environmental Management, Information Series 6 (DEAT 2002e)
- Cumulative Effects Assessment, Integrated Environmental Management, Information Series 7 (DEAT 2004b)
- Cost Benefit Analysis, Integrated Environmental Management, Information Series 8 (DEAT 2004c)
- Criteria for determining alternatives in EIA, Integrated Environmental Management, Information Series 11 (DEAT 2004d)
- Environmental Management Plans, Integrated Environmental Management, Information Series 12 (DEAT 2004e)
- Review in Environmental Impact Assessment, Integrated Environmental Management, Information Series 13 (DEAT 2004f)
- Environmental Impact Reporting, Integrated Environmental Management, Information Series 15 (DEAT 2004g)

6 DESCRIPTION OF RECEIVING ENVIRONMENT

This chapter provides a description of the receiving environment within the study area. Three components to the environment are recognised:

- Physical Environment;
- Biological Environment; and
- Socio-Economic Environment.

6.1 Physical Environment

6.1.1 Climate

The area is characterised by a warm-temperate, summer-rainfall climate, with overall Mean Annual Precipitation of 530mm. High summer temperatures. Severe frost (37 days per year on average) occurs in winter (Mucina & Rutherford: 2006).

6.1.2 Topography and drainage

The development site is situated at approximately 1334m to 1327m above mean sealevel (Google Earth 2020) on land that is slightly sloping towards the Rietgatspruit drainage line dissecting it from south east to north west from where it gravitates towards the Johan Nesor dam.

6.1.3 Geology and Soils

The following information has been extracted from the Engineering Geological Investigation Report undertaken by Viljoen Associates. Refer to Appendix E6.

The objective of the geotechnical investigation was to: -

- Determine the engineering properties of the site soils and bedrock including potentially expansive material, low bearing capacity soils, areas difficult to excavate, stability of open trenches, shallow ground water conditions and the quality of the insitu soils in terms of backfilling and permeability as well as for the construction of roads, general fill and parking bays.
- Present appropriate recommendations for the new mixed use development and precautionary measures in accordance with the requirements of the local authorities.

Site Description

The investigation area is underlain by andesite and dolerite and classified as a H1C1 zone representing slightly expansive (estimated total heave 7,5-15mm) and slightly compressible soil (estimated total settlement 5-10mm) and H2C1 (estimated total heave 15-30mm). A competent TLB may be required during placement of services.

No ground water was observed during the assessment, however the presence of ferricrete in the soil profiles indicates perennial water fluctuations. The area of investigation was characterised by a relative smooth gradient with slopes less than 12 degrees and accessibility was not restricted by topography. No potential for slope instability features, i.e. land slides, mud flows, etc. was identified. Development should be planned to take place above the 1:100 year flood line. There is no erosion potential in the NHBC zone and no potential for subsidence due to the presence of dolomite, i.e. sinkholes, undermining or backfilled soils were observed.

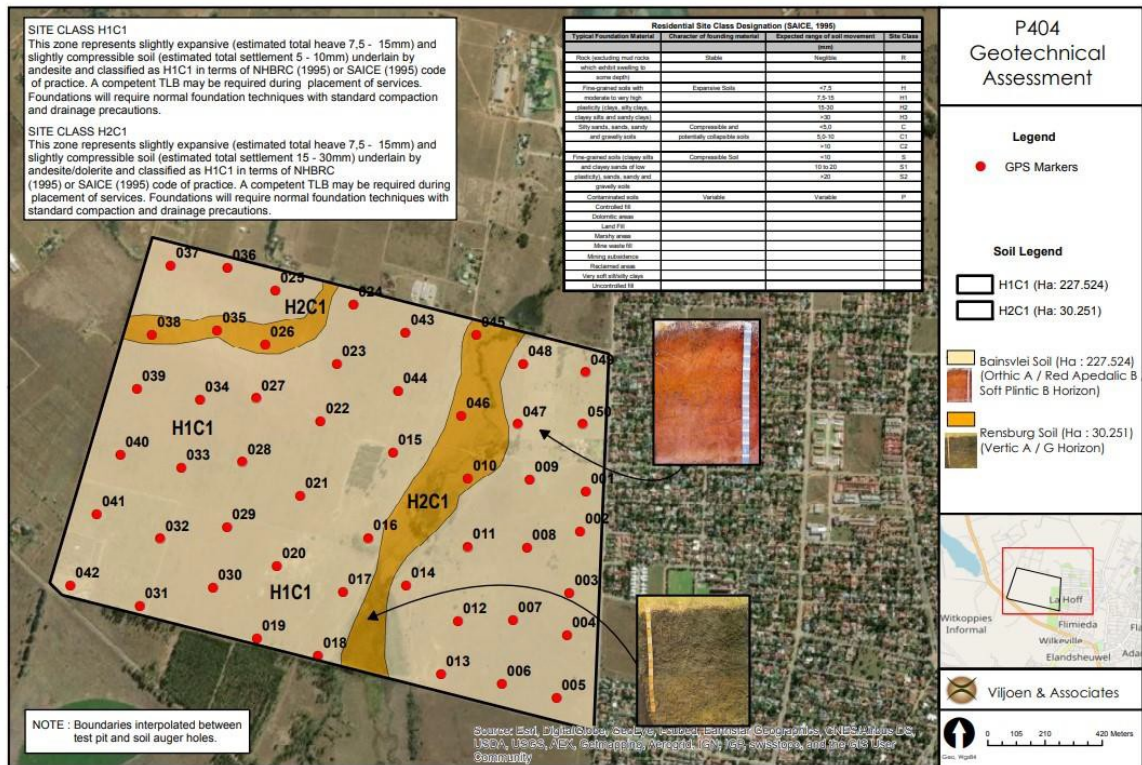


Figure 5: Geotechnical Map

6.2 BIOLOGICAL ENVIRONMENT

The following information has been extracted from the Ecological Fauna and Flora Habitat Survey undertaken by Anthene Ecological CC. Refer to Appendix E1.

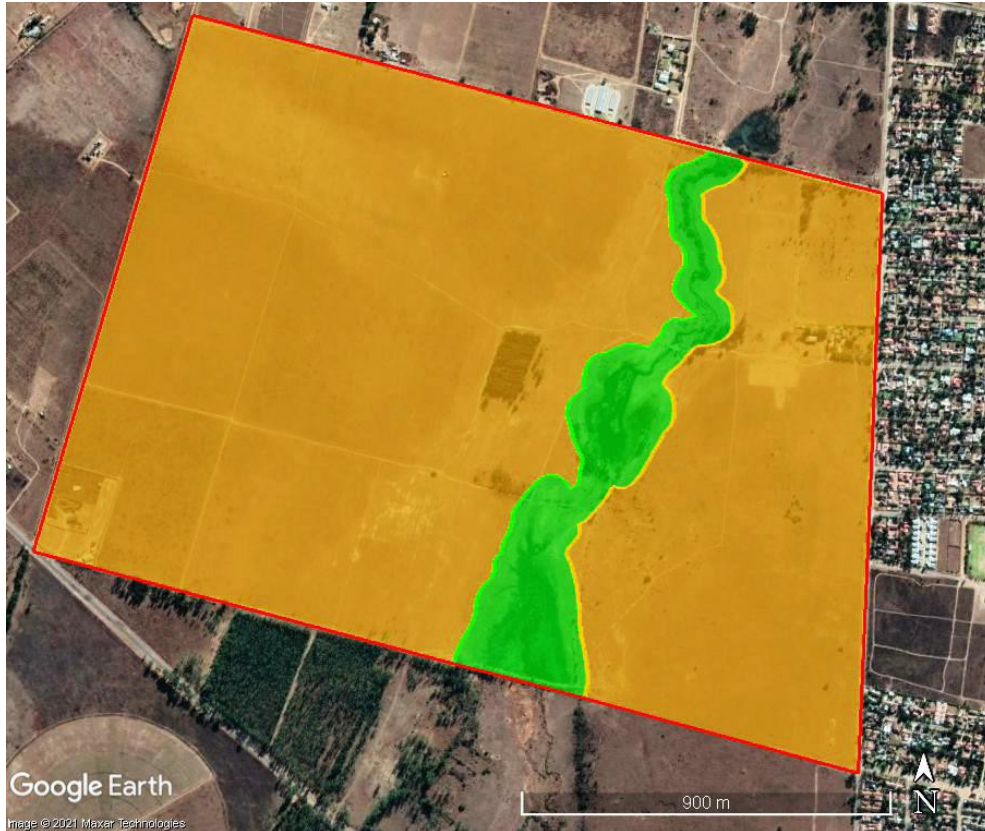
6.2.1 Ecological Fauna and Flora Habitat

Introduction

An ecological habitat survey is required for Elandsheuwel, Matlosana Local Municipality, North West Province (elsewhere referred to as the site). The survey focused on the possibility that threatened fauna or flora known to occur in North West Province are likely to occur within the proposed development. Species of known high conservation priority that do not qualify for threatened status also received attention in the survey.

Ecological Sensitivity at the site

Ecological sensitivity at the site is medium at the terrestrial areas and medium-high at the watercourse. The non-perennial river (watercourse) is disturbed in some places and modified by in-channel dams, so its medium-high sensitivity is because of its importance as a conservation corridor in the larger area and an important source for waterbirds.






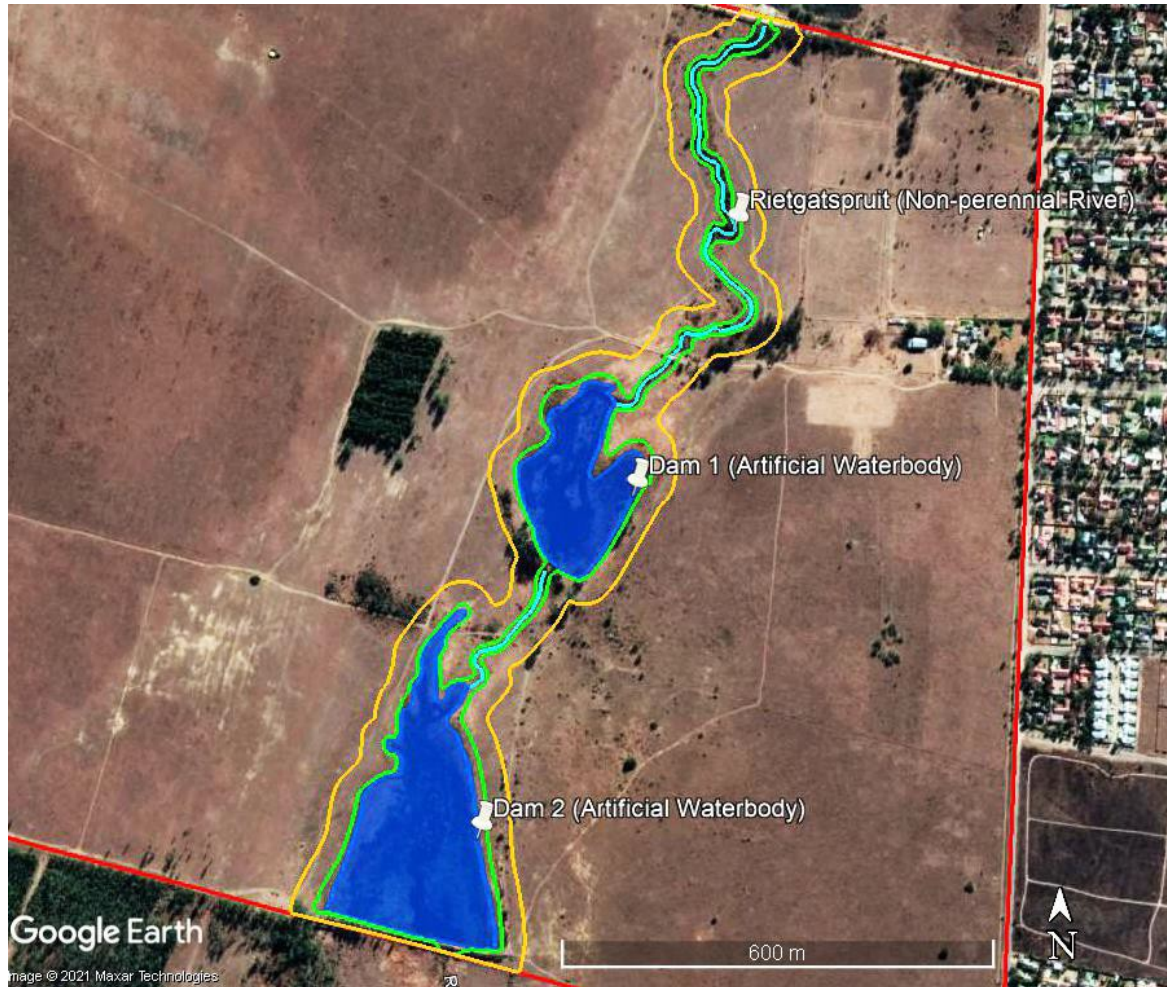
	Red outline	Boundaries of the site
	Orange outline and shading	Medium Sensitivity
	Green outline and shading	Medium-high Sensitivity

Figure 6: Ecological sensitivity Map

The non-perennial river, riparian zone and buffer zone are excluded from the development. Risks and possible impacts to the watercourses if the bufferzone is upheld, are not expected to be significant because excessive surface flow and erosion owing to the development are not anticipated. There is no distinct indication that interflow plays an important role in the maintenance of the watercourse. The geomorphological setting and flow regime will not be impacted. Loss of any wetland animal or plant species are not expected.







	Light blue outline	Route of active channel at the site
	Green outline	Outer edge of riparian zone
	Orange outline	Outer edge of buffer zone
	Darker blue outline and shading	Artificial Waterbody (In-channel dam)

Figure 7 Indication of the non-perennial river and in-channel dams, with their riparian zones and buffer zones, at the eastern part of the site.

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

CONCLUSION

Vegetation at the site ranges from transformed and degraded to a fair condition (albeit secondary succession took place at much of the site in the past owing to cultivation).

The terrestrial vegetation mainly consists of grassland, extensive clumps of alien invasive *Eucalyptus camaldulensis* trees and some indigenous trees which include *Vachellia karroo*, *Searsia lancea* and *Vachellia erioloba*. The indigenous shrub *Asparagus larycinus* occurs at the site.

Indigenous grass species include *Aristida congesta*, *Cynodon dactylon*, *Eragrostis lehmanianna*, *Eragrostis superba*, *Pogonarthria squarrosa*, *Heteropogon contortus*, *Melinis repens*, *Tragus berteronianus*, *Chloris virgata* and *Panicum coloratum*. Dwarf shrubs such as *Felicia muricata* and *Pentzia globosa* are conspicuous at some areas at the site. Indigenous forb species include *Cleome maculata*, *Gazania krebsiana*, *Bulbine narcissifolia*, *Barleria macrostegia*, *Berkheya onopordifolia*, *Geigeria ornativa* and *Hilliardiella oligocephala*. The herbaceous shrub *Gomphocarpus fruticosus* is noticeable at the site.

A number of alien invasive weed species are present in particular at disturbed areas. These alien invasive weeds include *Alternanthera pungens*, *Argemone ochroleuca*, *Gomphrena celosioides*, *Schkuhria pinnata*, *Tagetes minuta*, *Conyza bonariensis*, *Datura ferox*, *Datura stramonium*, *Xanthium spinosum*, *Verbena bonariensis*, *Verbena aristigera* *Tagetes minuta*, *Physalis viscosa* and *Zinnia peruviana*.

Riparian vegetation contains a conspicuous mixture of alien invasive and indigenous tree species. Alien invasive tree species at the riparian zones, including along the in-channel dams include *Eucalyptus camaldulensis*, *Morus alba*, *Melia azedarach* and *Sesbania punicea*. Exotic Pinus species (pines) are present at the banks of an in-channel dam at the site. Conspicuous indigenous tree species at the riparian zone are *Vachellia karroo*, *Ziziphus mucronata* and *Searsia lancea*. Alien invasive herb species at the riparian zone include *Rumex crispus*, *Oenothera rosea* and *Cirsium vulgare*. Sedges such as *Schoenoplectus corymbosus* and rushes such as *Juncus oxycarpus* are present at the riparian zone. The alien invasive grass species *Paspalum distichum* is conspicuous at the edges of the in-channel dams.

Most of the site has been cultivated (ploughed) some time in the past which has led to secondary succession of much of the grassland in the past. Homesteads, associated gardens, fences and roads are found at the site. Few excavations are also found at the site. The site borders on a tar road and residential areas on its eastern side.

Grassland at the site is represented by the Vaal-Vet Sandy Grassland vegetation type (Gh 10) which is listed as a Threatened Ecosystem, Endangered, according to the National List of Threatened Ecosystems (2011). Most of the site has been cultivated in the past. The scope for the restoration and conservation of natural grassland at the site is small.

No wetlands appear to be present at the site. A small non-perennial river, the Rietgatspruit river, with two in-channel dams are found at the site.

Rocky ridges are absent at the site.

No Threatened or Near Threatened plant or animal species appear to be resident at the site.

One plant species, *Vachellia erioloba* (Camel Thorn) that is not threatened but listed as Protected tree species occurs at the site. In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister. *Vachellia erioloba* is numerous at some areas at the site. A Camel Thorn Tree Forest or large Camel Thorn trees (>10 m) such as at Kathu and Witsand in the Northern Cape Province, are absent at the site. If the development is

approved and it is likely that some Camel Thorn trees (*Vachellia erioloba*) should be removed, a permit for removal would be imperative, and should be applied for.

The proposed footprint avoids the *Vachellia erioloba* trees in which case all the individual *Vachellia erioloba* trees at the site need to be clearly marked and avoided during the development.

There is little scope for most of the site to be part of a corridor of particular conservation importance, excluding the non-perennial river with its in-channel dams and including the buffer zones.

Site is part of the Middle Vaal Water Management Area (WMA 9). The site is not part of a Freshwater Ecosystem Priority Area (FEPA) or wetland cluster (Nel et al., 2011a, 2011b).

Ecological sensitivity at the site is medium at the terrestrial areas and medium-high at the watercourse. The non-perennial river (watercourse) is disturbed in some places and modified by in-channel dams, so its medium-high sensitivity is because of its importance as a conservation corridor in the larger area and an important source for waterbirds.

The non-perennial river (Rietgatspruit), in-channel dams, riparian zone and buffer zone (30 m) are excluded from the proposed footprint to conserve of conservation corridor of particular importance.

Continued monitoring and eradication of alien invasive plant species are imperative. It is in particular declared alien invasive species such as *Prosopis glandulosa* (Mesquite), *Melia azedarach* (Syringa) and alien invasive *Australian Acacia* species (Australian wattles) that should not be allowed to establish.

If the development is approved an opportunity presents itself to cultivate indigenous plant species and enhance urban biodiversity conservation.

6.3 SOCIAL ENVIRONMENT

6.3.1 Social and land use characteristics

Land use in the vicinity predominantly consists of the following:

Residential

The suburbs of Flimieda and La Hoff is located to the east of the subject site.

Rural residential

Various portions of the farms Elandsheuvel 402 IP and Kafferskraal 400 IP of varying, often smaller sizes adjoins the subject site.

In view of the above considerations the area in question can no longer be described as a traditionally agricultural node but rather a mixed land use area.

Since the receiving environment is already being characterised by mixed land uses, it is not envisaged that the development will significantly affect the social characteristics of the immediate environment.

Economic

The subject property is not at present being utilised for any specific economic gain.

The development will in all probability lead to employment opportunities during the construction and operational phases, the strengthening of the local business sector during the construction and operational phases as well as increased municipal revenue during the operational phase.

6.3.2 Heritage and Cultural Value

The following information has been extracted from the Heritage Impact Assessment Report undertaken by A Pelsers Archaeological Consulting. Refer to Appendix E2.

Conclusions and Recommendations

Background research indicates that there are some cultural heritage sites and features in the larger geographical area within which the study area falls. The area has been used in the past for extensive agricultural purposes (ploughing, crop growing and livestock) and if any sites, features or material of cultural heritage (archaeological and/or historical) origin or major significance existed here in the past it would have been extensively disturbed or destroyed as a result. Some remnants were however identified during the field assessment.

The area surrounding the proposed development has been substantially impacted in the recent past through both farming & urban residential related developments and as a result the original natural and historical landscape has been significantly altered.

Two sites were recorded during the assessment in the study & proposed development area footprint. Both are however of Low Significance from a Cultural Heritage perspective and the Phase 1 documentation can be seen as sufficient mitigation and no further measures are required in terms of them.

Site 1 is represented by the remains of a recent farming-related structure of cement & stone. Only the foundations of the structure remain. Although the exact age of the remains are not known it is likely less than 60 years of age based on the cement and is therefore of low significance. The remains could be that of a farm worker homestead. Site 2 is represented by a few individual MSA/LSA stone tools scattered across the area. These artifacts are in an open-air context and therefore not stratified and in situ and the site can be deemed of low significance. The scatter of material has a low density and no other similar material was identified in the area during the assessment.

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.

It is concluded that the proposed Flimedia Extension 3 Township establishment may proceed taking the recommendations provided above into consideration.

GPS Locations: S26 49 24.80 E26 38 30.10 (Site 1); S26 49 23.80 E26 38 30.40 (Site 2).

Cultural Significance: Low

Heritage Significance: None

Field Ratings: General protection C (IV C): Phase 1 is seen as sufficient recording and it may be demolished (Low significance)

Mitigation: No further mitigation required.



Figure 8: The location of the sites and material recorded during the assessment (Google Earth 2021).

7 PROJECT ALTERNATIVES

It is required to provide a full description of the process followed to reach the proposed preferred alternative within the site, in terms of Appendix 1(3)(1)(h) of the EIA Regulations 2014, as amended, including the following content:

- (a) details of all the alternatives considered;
- (b) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;
- (c) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;
- (d) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

- (e) the impacts and risks identified for each alternative, including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts—
 - (aa) can be reversed;
 - (bb) may cause irreplaceable loss of resources; and
 - (cc) can be avoided, managed or mitigated;
- (f) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;
- (g) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- (h) the possible mitigation measures that could be applied and level of residual risk;
- (i) the outcome of the site selection matrix;
- (j) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and
- (k) a concluding statement indicating the preferred alternatives, including preferred location of the activity.

The role of alternatives is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the activity, and or through avoiding potentially significant negative impacts”.

The above description emphasises the importance of impact significance in the identification of alternatives in that it should *inter alia* be aimed at avoiding potentially significant negative impacts.

The following types or categories of alternatives could be considered:

- Activity alternatives
- Location alternatives
- Process alternatives
- Demand alternatives
- Scheduling alternatives
- Input alternatives
- Routing alternatives
- Site layout alternatives
- Scale alternatives
- Design alternatives
- “No go” alternatives

For purposes of contextualisation and elucidation a brief description of each alternative in relation to its potential relevance and applicability is being provided.

Activity alternatives

“These are sometimes referred to as project alternatives, although the term activity can be used in a broad sense to embrace policies, plans and programmes as well as projects. Consideration of such alternatives requires a change in the nature of the activity. An example is incineration of waste rather than disposal in a landfill, or the provision of public transport rather than increasing the

capacity of roads. In view of the substantive differences in the nature of the activities, it is likely that this category is most appropriate at a strategic decision-making level, such as in a Strategic Environmental Assessment” (DEAT:2004d).

The activity does not take place at a strategic decision-making level. Activity alternatives therefore do not apply to this activity.

Location alternatives

“Location alternatives could be considered for the entire proposal or for a component of the proposal, for example the location of a processing plant. The latter is sometimes considered under site layout alternatives. A distinction should also be drawn between alternative locations that are geographically quite separate, and alternative locations that are in close proximity. In the case of the latter, alternative locations in the same geographic area are often referred to as alternative sites. This tends to be the more common application” (DEAT: 2004d).

During the pre-planning phase various location alternatives were considered. All of these alternatives were discarded by the applicant in favour of the development due to the following considerations:

- Ownership has already been secured.
- The subject site is located within the Urban Edge.
- The project intends to address an articulate need for commercial and residential land uses next to existing residential developments.
- No objections to the development were received during the prescribed public participation process.
- No potentially adverse negative impacts were identified during an initial assessment of the significance, probability and duration of potential impacts.

Process alternatives

“This type of alternative is particularly relevant to industrial projects. Due to the technical nature of the alternatives, the proponent is expected to play a major role in the identification of alternatives. For this reason transparency in identification and evaluation of alternatives is crucial” (DEAT:2004d).

Due to the non-industrial nature of the activity, process alternatives do not apply to the development.

Demand alternatives

“Demand alternatives arise when a demand for a certain product or service can be met by some alternative means. Thus, for example, the demand for electricity could be met by supplying more energy or through using energy more efficiently by managing demand” (DEAT:2004d).

Energy efficient alternatives may pose feasible and reasonable alternatives that are considered during the prescribed environmental impact assessment process.

Scheduling alternatives

“These are sometimes known as sequencing or phasing alternatives. In this case an activity may comprise a number of components, which can be scheduled in a different order or at different times and as such produce different impacts. For example, activities that produce noise could be

scheduled during the day to minimize impacts, and activities that may impact on birds could be scheduled to avoid the migratory season. Such alternatives could be incorporated into the project proposal and so be part of the project description, and hence need not necessarily be evaluated as separate alternatives” (DEAT:2004d).

Scheduling alternatives may pose feasible and reasonable alternatives will be considered.

Input alternatives

“By their nature, input alternatives are most applicable to industrial applications that may use different raw materials or energy sources in their processes. For example, an industry may consider using either high sulphur coal or natural gas as a source of fuel. Again, such alternatives could be incorporated into the project proposal and so be part of the project description, and need not necessarily be evaluated as separate alternatives” (DEAT:2004d).

Due to the non-industrial nature of the activity, input alternatives do not apply.

Routing alternatives

“Consideration of alternative routes generally applies to linear developments such as power lines, transport and pipeline routes. In route investigations, various corridors are investigated and compared in terms of their impacts” (DEAT:2004d).

The activity does not represent a linear development and routing alternatives were thus not considered.

Site layout alternatives

“Site layout alternatives permit consideration of different spatial configurations of an activity on a particular site. This may include particular components of a proposed development or may include the entire activity. For example, siting of a noisy plant away from residences, and secondly, siting of a particular structure either prominently to attract attention or screened from view to minimise aesthetic impacts” (DEAT:2004d).

The issues that have been identified as potential impacts necessitated the consideration of site layout alternatives during the prescribed environmental impact assessment phase.

Scale alternatives

“In some cases, activities that can be broken down into smaller units can be undertaken on different scales. For example, in a housing development there could be the option of 100, 150 or 200 housing units. Each of these scale alternatives may have different impacts” (DEAT:2004d).

The scale of the project proposal has been determined in accordance with perceived needs. Scale alternatives as such were therefore not pursued. It needs to be mentioned that a phased approach to be informed by budgetary considerations and market factors may be followed. This approach may influence the eventual scale of the activity.

Design alternatives

“Consideration of various designs for aesthetic purposes or different construction materials in an attempt to optimise local benefits and sustainability would constitute design alternatives. Appropriate applications of design alternatives are communication towers. In such cases, all designs are assumed to have different impacts. Generally, the design alternatives could be

incorporated into the project proposal and so be part of the project description, and need not be evaluated as separate alternatives” (DEAT: 2004d).

Design alternatives that will enhance the aesthetic character of the area will be embedded into the development’s building designs. No specific design alternatives are thus proposed.

“No-go” alternatives

“The “no-go” alternative ... assumes that the activity does not go ahead, implying a continuation of the current situation or the status quo. In a situation where the negative environmental impacts have high significance, the “no-go” alternative takes on particular importance” (DEAT:2004d).

The “no-go” alternative normally receives consideration when an activity poses adverse negative impacts to the environment that cannot be successfully mitigated. The significance assessment did not reveal any potentially adverse negative impacts, either in unmitigated or mitigated form.

Alternatives considered

Based on the preceding discussion the following possible alternatives have been identified for purposes of detailed comparative assessment:

- Demand alternatives (e.g. energy efficient alternatives);
- Scheduling alternatives (e.g. construction during non-raining months);
- Site layout alternatives necessitated by specialist studies; and the
- “No Go” alternative.

Demand alternatives (e.g. energy efficient alternatives)

The following energy efficient alternatives will be implemented in the proposed development:

It is recommended to consider the implementation of energy efficient measures. The following standards can be used as a guideline.

- i) SANS 204 Energy Efficiency in Building &
- ii) SANS 10400 Part X & XA Application of the National Building Act – Energy Usage.

Architectural point of design:

- i) Aluminum windows, larger northern openings to maximize solar radiation in winter
- ii) and minimize it in summer;
- iii) Smaller southern windows to prevent cold radiation in winter; &
- iv) Correct orientation, north facing.

From an energy usage point of design:

- i) Energy efficient electrical stoves or Gas stoves;
- ii) Gas and/or Solar geysers or Heat pumps;
- iii) Energy efficient lighting such as LED’s; &
- iv) Solar PV.

Waste Minimisation and Recycling

Waste separation and recycling can generate jobs as well as removing recyclable resources from

landfill. Individuals and recycling cooperatives can collect and separate wastes and sell recyclable materials. Buyback centres can be established in neighbourhoods, where recyclers can buy recyclable materials for reprocessing. Organic materials can also be separated and made into compost, adding nutrients to soil for agricultural production and greening.

Energy efficient alternatives, which will ensure a more sustainable development and reduce the carbon footprint of the development, is regarded as the preferred alternative.

Scheduling alternatives (e.g. construction during non-raining months)

Scheduling alternatives during non-raining months and during raining months will be assessed in the impact assessment of impacts associated with the proposed development (*refer to Section 9.4*).

Alternative 1 – scheduling construction during non-raining months.

Alternative 2 - scheduling construction during raining months.

Site layout alternatives

As mentioned, the said property is owned by the applicant, and is located within an urban area. However, layout design alternatives were assessed and a preferred alternative identified.

According to the Ecological Study, the ecological sensitivity at the site is medium at the terrestrial areas and medium-high at the watercourse. The non-perennial river (watercourse) is disturbed in some places and modified by in-channel dams, so its medium-high sensitivity is because of its importance as a conservation corridor in the larger area and an important source for waterbirds. The ecologist demarcated the non-perennial active channel and riparian zone with a 30 m buffer zone. These are excluded from the development.

Risks and possible impacts to the watercourses if the buffer zone is upheld, are not expected to be significant because excessive surface flow and erosion owing to the development are not anticipated. There is no distinct indication that interflow plays an important role in the maintenance of the watercourse. The geomorphological setting and flow regime will not be impacted. Loss of any wetland animal or plant species are not expected.

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

The sensitive areas identified during field investigations are the non-perennial river (Rietgatspruit), in-channel dams and riparian zone. The watercourses, like all watercourses encountered, should be approached as sensitive. These areas were thus demarcated and rated as having a sensitivity rating of High. These areas should ideally be viewed during project planning and development as 'No-Go' zones. The layout options were investigated in terms of the layout for the proposed establishment so as to accommodate the riverine area.

In addition, the flood line was determined and no development are proposed in the 1:100 year flood line area. The 1:100 year flood line area also incorporates the buffer zones as identified by

the ecologist. The flood lines are indicated and endorsed by the relevant engineer on the Site Development Plan. The flood line Assessment was conducted by CWT Consulting Civil Engineers. (*Appendix E7 refers*)

Alternative 1 (preferred) – site layout in consideration of the 1:100 year flood line

Alternative 2 (Alternative) - without consideration for the specialist input and the flood line determination. *Refer to App A for the Preferred/ Proposed Alternative 1 and Alternative 2.*

“No Go” alternative

The No-Go alternative will entail leaving the site in its present vacant state, prone to illegal dumping, sand mining, and illegal invasion by informal settlers.

The subject site represents the establishment of a new mixed land use township that may address an increasing and pending shortage for housing. Furthermore, the activity site is favourably and strategically located for purposes of the proposed activity due to the following considerations:

- The locality of the proposed activity is suitable for purposes of its intended land use in that:
 - It is strategically well placed along prominent routes i.a the R30.
 - The subject site is located within the Urban Edge.
- The project intends to address an articulate need for commercial and residential land uses next to existing residential developments.
- The prescribed public participation process did not lead to any comments or objections either with regard to its location or otherwise;
- The relevant impact assessment did not reveal any potentially adverse negative impacts that can be linked to the proposed development location.

The proposed activity thus represents the best practicable environmental option for this site in that it represents the utilisation of ecologically degraded land to provide a community-oriented service and socio-economic spin-offs such as job generation and economic empowerment.

The No-Go alternative is therefore not regarded as the preferred alternative in the long term.

8 PUBLIC PARTICIPATION PROCESS

Chapter 6 of Government Notice No. R. 326 of 7 April 2017 provides for a public participation process.

It is further stipulated that the person conducting a public participation process must take into account any guidelines applicable to public participation and must give notice to all potential interested and affected parties of the application which is subjected to public participation by:

- Fixing a notice board at a place conspicuous to the public at the boundary or on the fence of the site where the activity to which the application relates is or is to be undertaken; and any alternative site mentioned in the application;
- Giving written notice to:

- The occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
- The owners and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
- The municipal councilor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represents the community in the area;
- The municipality which has jurisdiction in the area; and
- Any organ of state having jurisdiction in respect of any aspect of the activity; and
- Any other party as required by the competent authority.
- Placing an advertisement in one local newspaper; or any official *Gazette* that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations; and
- 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 local 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 *Gazette*;
- Using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desiring of but unable to participate in the process due to illiteracy, disability or any other disadvantage.

The main purpose of the public participation process that was undertaken in this regard, over and above giving effect to the relevant regulations, was to obtain information through a process of informing and involving interested and affected parties (I&AP's). The aim was for potential I&AP's to become aware of the positive and negative effects that the development may bring about in their living environments. The identification and consideration of negative effects can also serve as basis for the developer to effect changes in the course of action, either through mitigation of undesirable or unaccepted impacts, or through the introduction of alternatives.

The following objectives were pursued through the public participation process:

- To inform potential I&AP's of the development;
- To allow potential I&AP's to raise issues, concerns and suggestions;
- To promote transparency and an understanding of the project;
- To direct the focus of the EIA towards the most pertinent issues ;
- It was not one of the objectives of the public participation process to quell opposition or to foster consensus among role players.

This section of the report focuses on the issues and comments raised by I&AP's, if any. These inputs will be used to determine the anticipated impacts that such a development can have on the environment and highlight particular issues related to the project. The perceived impacts can assist individuals, communities as well as government to understand and anticipate the possible consequences (positive and negative) of the project.

8.1 Public Participation Activities Undertaken during the Scoping Phase

Proof of public participation during the Scoping Phase was included in the Final Scoping Report

Notification of potential I&AP's

In terms of Subsection (6) of Section 41 of Government Notice No. R. 326 of 7 April 2017 the person conducting the public participation process must ensure that information containing all relevant facts in respect of the application is made available to potential or registered interested and affected parties; and that participation by potential interested and affected parties is facilitated in such a manner that all potential interested and affected parties are provided with a reasonable opportunity to comment on the application.

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 may be combined with any public participation process prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.

In order to comply with this requirement as well as other related requirements stated in the relevant regulations, written notice of the development together with the opportunity to comment was given to the following persons and / or institutions:

Written notice was given to:

- City of Matlosana Municipality
- Relevant municipal councilor through the Office of the Speaker
- Potchefstroom, Department of Water and Sanitation
- Owners and occupiers of land adjacent to the site :

Property	Registered owner
Portion 129 Elandsheuvel 402 IP	Carel Kuhn Trust
Portion 157 Elandsheuvel 402 IP	Savuka Mining CC
Portion 158 Elandsheuvel 402 IP	Marlizan Beleggings CC
Portion 414 Elandsheuvel 402 IP	Olivier Familietrust
Portion 415 Elandsheuvel 402 IP	Petrus Harmzen
Portion 825 Elandsheuvel 402 IP	Joze Maleta
Portion 827 Elandsheuvel 402 IP	Joze Maleta
Portion 904 Elandsheuvel 402 IP	Peter Beyers Pretorius
Portion 920 Elandsheuvel 402 IP	Gabriel Jacobus Roode
Portion 922 Elandsheuvel 402 IP	Costas Michael Demetriou
Portion 18 Kafferskraal 400 IP	Cornelia Wilhelmina Nel
Portion 171 Kafferskraal 400 IP	Etienne & Cornelia Botha
Portion 172 Kafferskraal 400 IP	Wynand Jansen Van Vuuren

Proof of notice board

A notice board complying with the requirements was placed on the subject property on 8 April 2021.

Proof of newspaper advertisement

An advertisement complying with the requirements has been placed in the Klerksdorp Rekord newspaper of 9 July 2021.

I&AP Register

In terms of Section 42 of Government Notice No. R. 326 of 7 April 2017 an applicant must ensure the opening and maintenance of a register which contains the names and addresses of all persons who, as a consequence of the public participation process, have submitted written comments or attended meetings with the applicant or EAP; all persons who, after completion of the public participation process have requested the applicant, in writing, for their names to be placed on the register; and all organs of state which have jurisdiction in respect of the activity to which the application relates.

Summary of issues raised

In terms of Subsection 1 of Section 43 of Government Notice No. R. 326 of 7 April 2017 a registered interested and affected party is entitled to comment, in writing, on all written submissions made to the competent authority by the applicant, and to bring to the attention of the competent authority any issues which that party believes may be of significance to the consideration of the application, provided that comments submitted within the relevant timeframes or any extension, and 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.

A copy of the Draft Scoping Report has been distributed to the registered Interested and Affected Parties for comment.

8.2 Public Participation Activities Undertaken during the EIA Phase

Notification of the availability of the Draft EIAR will be submitted to all I&APs.

The DEIAR will be available for comment on the Setala website using a given link. The comment period will be for 30 days until 07/07/2022.

Copies of the DEIAR will be submitted to the following key stakeholders:

- North West Department of Economic Development, Environment, Conservation and Tourism, Environmental Impact Management
- City of Matlosana Municipality, Municipal Manager
- Department of Water and Sanitation, Bloemfontein Office
- SA Heritage Resources Agency (via SAHRIS)
- Department of Agriculture

9 ENVIRONMENTAL IMPACT ASSESSMENT

9.1 Introduction

The EIA of the project activities is determined by identifying the environmental aspects and then undertaking an environmental risk assessment to determine the significant environmental aspects. The environmental impact assessment has included all phases of the project namely:

- Construction Phase; and
- Operational Phase.

Please note: due to the nature of the development it is anticipated that the infrastructure would be permanent, thus not requiring decommissioning or rehabilitation. Maintenance of infrastructure will be addressed under the operational phase.

9.2 Impact Assessment Methodology

The potential environmental impacts associated with the project will be evaluated according to its nature, extent, duration, intensity, probability and significance of the impacts, whereby:

- **Nature:** A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
- **Extent:** The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- **Duration:** Indicates what the lifetime of the impact will be;
- **Intensity:** Describes whether an impact is destructive or benign;
- **Probability:** Describes the likelihood of an impact actually occurring; and
- **Cumulative:** In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

TABLE 3: CRITERIA TO BE USED FOR RATING OF IMPACTS

Criteria	Description			
Extent	National (4) The whole of South Africa	Regional (3) Provincial and parts of	Local (2) Within a radius of 2 km of the construction site	Site (1) Within the construction site

		neighbouring provinces		
Duration	Permanent (4) Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	Long-term (3) The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	Medium-term (2) The impact will last for the period of the construction phase, where after it will be entirely negated	Short-term (1) The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
Intensity	Very High (4) Natural, cultural and social functions and processes are altered to extent that they permanently cease	High (3) Natural, cultural and social functions and processes are altered to extent that they temporarily cease	Moderate (2) Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	Low (1) Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
Probability of occurrence	Definite (4) Impact will certainly occur	Highly Probable (3) Most likely that the impact will occur	Possible (2) The impact may occur	Improbable (1) Likelihood of the impact materialising is very low

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

TABLE 4: CRITERIA FOR THE RATING OF CLASSIFIED IMPACTS

Low impact (4 - 6 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (7 - 9 points)	Mitigation is possible with additional design and construction inputs.
High impact (10 - 12 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact (13 - 20 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a “very high impact” is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.

Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.
It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.	

The suitability and feasibility of all proposed mitigation measures will be included in the assessment of significant impacts. This will be achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented. Mitigation measures identified as necessary are included in an EMPr. The EMPr forms part of the Environmental Impact Assessment Report (EIAR). *Refer to Appendix F.*

9.3 Impacts

9.3.1 Geology Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
Soils stability Geological attributes such as stability, excavability and permeability may negatively affect the activity especially during its construction phase	1	2	2	4	Negative Medium (-8)	<ul style="list-style-type: none"> Development zonation for urban development according to the NHBRC was conducted, indicating the geotechnical conditions on site. The investigation area underlain by andesite and dolerite was classified as H1C1 representing slightly expansive (estimated total heave 7,5-15mm), slightly compressible soil (estimated total settlement 5-10mm) and H2C1 (estimated total heave 15- 30mm). A competent TLB will be required during placement of services. No ground water was observed during the investigation, however the presence of ferricrete in the soil profiles indicates perennial water fluctuations. The area of investigation was characterised by a relative smooth gradient with slopes less than 12 degrees and accessibility was not restricted by topography. No potential for slope instability features, i.e. land slides, mud flows, etc. was identified. 	1	2	1	2	Negative Low (-6)

						• Development should be planned to take place above the 1:100 year flood line.					
OPERATIONAL											
Soils stability Geological attributes such as stability, excavatibility and permeability may negatively affect the activity especially during its operational phase	1	4	2	4	Negative High (-10)	There is no erosion potential in the NHBC zone and no potential for subsidence due to the presence of dolomite, i.e. sinkholes, undermining or backfilled soils were observed.	1	4	2	2	Negative Medium (-8)

9.3.2 Topographical Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
Surface gradient	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> It is imperative that any proposed water channels and water features on the proposed area of development be properly sealed to prevent surface and subsurface seepage. Care must be taken to ensure adequate surface drainage to prevent accumulation of water next to structures. 	1	2	1	2	Negative Low (-6)
Alteration of topography due to stockpiling of soil, building material and debris and waste material on site.	1	3	2	3	Negative Medium (-9)	<ul style="list-style-type: none"> All stockpiles must be restricted to designated areas and are not to exceed a height of 2 metres. Stockpiles created during the construction phase are not to remain during the operational phase. The contractor must be limited to clearly defined access routes to ensure that sensitive 	1	2	1	2	Negative Low (-6)

						and undisturbed areas are not disturbed.				
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9.3.3 Hydrology Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
Increased urban run-off	2	2	2	1	Negative Medium (-7)	<ul style="list-style-type: none"> Land disturbance must be minimized in order to prevent erosion and run-off - this includes leaving exposed soils open for a prolonged period of time. As soon as vegetation is cleared (including alien) the area must be re-vegetated if it is not to be developed on in future. 	2	1	1	1	Negative Low (-5)
OPERATIONAL											
Erosion	1	3	2	3	Negative Medium (-9)	<ul style="list-style-type: none"> The design standards proposed are: Kerbed, surfaced roads to accommodate 1:5 year return period stormwater runoff. Kerb Inlets and an underground stormwater system to accommodate the 1:25 year return period stormwater runoff Erosion protection and stabilization of erodable areas and associated sedimentation control. The storm water system design accommodates the surface run-off from all the erven into the roads where the road and Kerbs will act as channels to dispose all storm water to lower laying areas. 	1	2	1	2	Negative Low (-6)

							• Stormwater management will be such that the amount of storm water run-off from this development does not exceed the maximum run-off that can be accommodated surface wise into the internal road network.					
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9.3.4 Vegetation and Fauna Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
Clearing of habitat of medium and low sensitivity.	1	3	2	3	Negative Medium (- 9)	Avoid watercourse and buffer zone. Non-perennial active channel and riparian zones with 30 m bufferzone are excluded from the development.	1	2	2	2	Negative Medium (- 7)
Sensitive species: Presence of Threatened or Near Threatened Plants, Mammals, Reptiles, Amphibians and Invertebrates at the site appear to be unlikely. A Protected tree species <i>Vachellia erioloba</i> (Camel Thorn) is present at the site.	1	3	2	2	Negative Medium (-9)	No specific mitigation measures for Threatened or Near Threatened sensitive species at the site apply at the site. Avoidance of individual <i>Vachellia erioloba</i> trees where practical (Application for permits when <i>Vachellia erioloba</i> trees will be damaged or removed, if the development is approved, is essential).	1	2	1	2	Negative Low (-6)
Fragmentation of corridors of particular conservation concern. Non-perennial rivers at the site are a corridor of particular conservation concern.	1	2	2	2	Negative Medium (- 7)	Non-perennial active channel and riparian zone with 30 m bufferzone are excluded from the development.	1	2	1	2	Negative Low (-6)

Possible disturbance, trapping, hunting and killing of vertebrates during construction phase	1	2	2	2	Negative Medium (-7)	<ul style="list-style-type: none"> If the development is approved, contractors must ensure that no animal species are disturbed, trapped, hunted or killed during the construction phase. 	1	2	1	2	Negative Low (-6)
OPERATIONAL/CUMULATIVE											
<p>An increased infestation of exotic or alien invasive plant species owing to clearance or disturbance where the footprint took place.</p> <p>Infestation by alien invasive species could replace indigenous vegetation or potential areas where indigenous vegetation could recover. It is in particular declared alien invasive species such as <i>Prosopis glandulosa</i> (Mesquite), <i>Melia azedarach</i> (Syringa) or alien invasive <i>Australian Acacia species</i> (Australian Wattles) that should not be allowed to establish. Once established these combatting these alien invasive plant species may become very expensive in the long term.</p>	1	2	2	2	Negative Medium (-7)	<ul style="list-style-type: none"> Continued monitoring and eradication of alien invasive plant species are imperative. It is in particular declared alien invasive species such as <i>Prosopis glandulosa</i> (Mesquite), <i>Melia azedarach</i> (Syringa) and alien invasive <i>Australian Acacia species</i> (Australian wattles) that should not be allowed to establish. 	1	2	1	2	Negative Low (-6)

9.3.5 Waste Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
Contamination of the surface and site with general waste.	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> An adequate number of general waste receptacles, including bins must be arranged around the site to collect all domestic refuse, and to minimise littering. Bins must be provided on site for use by 	1	2	1	2	Negative Low (-6)

						<p>employees.</p> <ul style="list-style-type: none"> • Bins should be clearly marked and lined for efficient control and safe disposal of waste. • Different waste bins, for different waste streams must be provided to ensure correct waste separation. • A fenced area must be allocated for waste sorting and disposal on the site. • General waste produced on site is to be collected in skips for disposal at the local municipal waste site. • Hazardous waste is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site. • Under no circumstances is waste to be burnt or buried on site. • Waste bins should be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance. • All general waste must be removed from the site at regular intervals and disposed of in suitable waste receptacle 					
<p>Contamination of the surface and site with general and hazardous waste. Hazardous waste produced on site include:</p> <ul style="list-style-type: none"> • Oil and other lubricants, diesel, paints, solvent; • Containers that contained chemicals, oils or greases; and • Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen). 	1	2	3	3	Negative Medium (-9)	<ul style="list-style-type: none"> • Hazardous waste is to be disposed at a Permitted Hazardous Waste Landfill Site. • The Environmental Manager must have as part of his/her records the waste manifest for each batch based disposal. • Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid). • A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal. • In the case of a spill of hydrocarbons, 	1	1	2	2	Negative Low (-6)

						chemicals or bituminous, the spill should be contained and cleaned up and the material together with any contaminated soil collected and disposed of as hazardous waste to minimize pollution risk.					
OPERATIONAL											
Generation and disposal of domestic waste by the proposed development.	1	3	2	2	Negative Medium (-8)	Waste will be collected by an accredited waste company and disposed of at an appropriate and licensed waste disposal facility.	2	1	1	2	Negative Low (-6)

9.3.6 Air Quality Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
Dust and emissions during construction generated by debris handling and debris piles, truck transport, bulldozing, general construction.	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> Dust must be suppressed on the construction site and during the transportation of material during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off. Loads could be covered to avoid loss of material in transport, especially if material is transported off site. Dust and mud should be controlled at vehicle exit and entry points to prevent the dispersion of dust and mud beyond the site boundary. Facilities for the washing of vehicles should be provided at the entry and exit points. A speed limit of 40 km/hr should be set for all 	2	1	1	2	Negative Low (-6)

						vehicles travelling over exposed areas. <ul style="list-style-type: none"> • During the transfer of materials, drop heights should be minimised to control the dispersion of mater being transferred. • The height of all stockpiles on site should be a maximum of 2m. • Use of dust retardant road surfacing if made necessary due to the exceedance of Air Quality Guidelines. 					
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9.3.7 Noise Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
During the construction phase there is likely to be an increase in noise pollution from construction vehicles and construction staff.	1	2	3	2	Negative Medium (-8)	<ul style="list-style-type: none"> • All construction activities should be undertaken according to daylight working hours between the hours of 07:00 – 17:00 on weekdays and 7:30 –13:00 on Saturdays. • No construction activities may be undertaken on Sunday. • Provide all equipment with standard silencers. Maintain silencer units in vehicles and equipment in good working order. • All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability. • Construction staff working in area where the 8-hour ambient noise levels exceed 60 dBA must have the appropriate Personal Protective 	1	1	1	2	Negative Low (-5)

						Equipment (PPE). • All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).					
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9.3.8 Heritage Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
Disturbance of graves and sites of archaeological, historical and cultural significance.	1	3	2	2	Medium High (-8)	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.	1	1	1	2	Negative Low (-5)

9.3.9 Traffic Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											
There is likely to be an increase in traffic from	1	2	2	3	Negative Medium	• Construction vehicles are to avoid main roads	1	1	1	2	Negative Low

construction vehicles.					(-8)	<ul style="list-style-type: none"> during peak traffic hours. All vehicles entering the Site are to be roadworthy. When using heavy or large vehicles / equipment, "spotters" are to be present to assist the driver with his blind spots. Any incident or damage to a vehicle must be reported immediately. 					(-5)
The proposed development would have an impact on the current road network	2	3	2	2	Negative Medium (-9)	<ul style="list-style-type: none"> The applicant must comply with the access arrangements, and road upgrades, which are the applicant's responsibility, as stated in the Traffic Impact Study. This compliance will be in terms of the Matlosana Local Municipality Bylaws (for applications i.t.o. SPLUMA) or the Section 82 or Section 101 requirements (as applicable for applications i.t.o the Ordinance). 	2	1	1	2	Negative Low (-6)
OPERATIONAL											
The proposed development would have an impact on the current road network.	2	3	2	2	Negative Medium (-9)	<ul style="list-style-type: none"> Traffic control measures to be implemented 	2	2	1	1	Negative Low (-6)
CUMULATIVE											
The proposed development together with other developments in the region would have a significant impact on the current road network						<ul style="list-style-type: none"> Traffic control measures at intersections along the main roads will have to be changed once more development occurs in the region 					

9.3.10 Socio-Economic Impacts

Where E = Extent, D = Duration, I = Intensity and P = Probability of occurrence.

Potential Aspect and / or Impact	Before Mitigation				Significance Rating (before mitigation)	Mitigation and management measures	After Mitigation				Significance Rating (after mitigation)
	E	D	I	P			E	D	I	P	
CONSTRUCTION											

Employment											
The development will result in job creation and provision of employment.	1	2	1	3	Positive Medium (+7)	<ul style="list-style-type: none"> All labour (skilled and unskilled) and contractors should be sourced locally where possible. A labour and recruitment policy must be developed, displayed and implemented by the contractor. Recruitment at the construction site will not be allowed. Where possible, labour intensive practices (as opposed to mechanised) should be practiced. The principles of equality, BEE, gender equality and non-discrimination will be implemented. 	1	2	1	3	Positive Medium (+7)
The development will lead to increased rates and taxes accruing to the local municipality.	1	2	1	3	Positive Medium (+7)						
Safety											
Public safety during construction.	1	2	2	2	Negative Medium (-7)	<ul style="list-style-type: none"> Members of the public adjacent to the construction site should be notified of construction activities in order to limit unnecessary disturbance or interference. Construction activities will be undertaken during daylight hours and not on Sundays. 	1	2	1	1	Negative Low (-5)
Construction staff safety during construction. Where sourcing of local labour is not possible, "outsiders" may need to be employed in order to address skills shortages. On-site accommodation may lead to social disturbances in the area and will also require additional service provisioning measures.	1	2	2	3	Negative Medium (-8)	<ul style="list-style-type: none"> Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction. All construction staff must have the appropriate PPE. The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents. Report and record any environmental, health and safety incidents to the responsible person. 	1	2	2	1	Negative Low (-6)
OPERATIONAL											
Employment											

<ul style="list-style-type: none"> • The development will result in job creation and provision of employment. • Jobs for the maintenance of infrastructure and services will be created following the completion of the development. These jobs might be made available to existing labour there creating long term employment. • Service contractors could have access to other developments or projects in the area thereby creating long term employment. 	2	3	2	3	Positive High (+10)						
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TABLE 5: SUMMARY OF IMPACT ASSESSMENT AFTER MITIGATION

CONSTRUCTION PHASE (PROPOSAL)

Impact Description	Intensity	Extent	Duration	Probability it would occur	Significance rating After Mitigation
Geology: Stability, excavability, and permeability may negatively affect the activity	1	2	1	2	Low
Topography: Surface gradient	1	2	1	2	Low
Hydrogeology: Groundwater contamination	1	2	1	2	Low
Hydrology: Erosion due to increased urban runoff	2	1	1	1	Low
Impact on Natural Habitat	1	2	2	2	Medium
Removal of sensitive species	1	2	1	2	Low
Fragmentation of corridors	1	2	1	2	Low
Possible disturbance, trapping, hunting and killing of vertebrates	1	2	1	2	Low
Waste Management	1	2	1	2	Low
Impact of odour, Noise, Safety and Dust	2	1	1	2	Low
Impact on Cultural Heritage Resources	1	1	1	2	Low
Traffic Impact	2	2	1	1	Low
Impact of Labourers	1	2	2	1	Low
Economic Impacts This will be a POSITIVE impact	1	2	1	3	Medium

OPERATIONAL PHASE (PROPOSAL)

Impact Description	Intensity	Extent	Duration	Probability Probability it would occur	Significance rating After Mitigation
Geology: Stability	1	2	1	2	Low
Hydrogeology: Groundwater contamination	1	2	1	2	Low
An increased infestation of exotic or alien invasive plant species owing to clearance or disturbance where the footprint took place.	1	2	1	2	Low
Waste management	2	1	1	2	Low
Infestation by Alien vegetation	1	2	1	2	Low
Traffic: The proposed development would have an impact on the current road network	2	2	2	2	Low
Economic Impacts This will be a POSITIVE impact	1	2	1	3	High

9.4 Comparative Assessment of Alternatives

Table 6 provides a comparative assessment of the two Layout Alternatives options i.e. Layout Alternative 1 – in consideration of the flood lines and the sensitive areas of the watercourse and Layout Alternative 2 - without consideration of the flood lines and the sensitive areas of the two watercourse.

The comparative assessment below takes into account the impact assessment provided in Section 9.3.

TABLE 6: COMPARATIVE ASSESSMENT OF THE TWO LAYOUT OPTIONS AFTER MITIGATION

	Layout Alternative 1	Layout Alternative 2
Consideration of the flood lines and the sensitive areas of the watercourse	-6	-8
	The non-perennial river (watercourse) has a medium-high sensitivity because of its importance as a conservation corridor in the larger area. The ecologist demarcated the non-perennial active channel and riparian zone with a 30 m buffer zone. These are excluded from the development. The 1:100 year flood line was determined and it encompasses the above. Alternative 1 is of a medium significance and the post mitigation significance is low . The potential impacts before mitigation for Alternative 2 is of a high significance and the post mitigation significance is medium .	
TOTAL	-6	-8

Layout Alternative 1 (in consideration of the flood lines) is regarded as the preferred alternative.

Table 7 provides a comparative assessment of the two scheduling Alternatives options i.e. Scheduling Alternative 1 – construction during the non-raining season and Scheduling Alternative 2 - construction during the raining season.

For many of the specialist fields, the potential impacts for the different project phases (construction and operations) for the two scheduling options are relatively the same and have been combined to prevent repetition.

TABLE 7: COMPARATIVE ASSESSMENT OF THE TWO CONSTRUCTION SCHEDULING OPTIONS AFTER MITIGATION

	Scheduling Alternative 1	Scheduling Alternative 2
Geology	-6	-6
	Geological attributes such as stability, excavability, permeability and corrosive nature of soils may negatively affect the activity especially during its operational phase. The geological impacts before mitigation for both alternatives are of a medium significance and the post mitigation significance is low .	
Topography	-6	-8
	Developing the site will result in disturbance to topography which could be more detrimental during the rainy season. The potential impacts before mitigation for Alternative 1 is of a medium significance and the post mitigation significance is low . The potential impacts before mitigation for Alternative 2 is of a medium significance and the post mitigation significance is medium .	

Hydrology	-5	-8
	Land disturbance and increased urban run-off could result in erosion for both alternatives. The potential impacts before mitigation for Alternative 1 is of a medium significance and the post mitigation significance is low . The potential impacts before mitigation for Alternative 2 is of a medium significance and the post mitigation significance is medium .	
Vegetation and Fauna	-6	-7
	Clearing of vegetation at habitat of medium and low sensitivity at the proposed footprint. The potential impacts before mitigation for Alternative 1 is of a medium significance and the post mitigation significance is low . The potential impacts before mitigation for Alternative 2 is of a medium significance and the post mitigation significance is medium due to soil erosion as a result of clearing of vegetation.	
Waste	-6	-6
	During construction, impacts such as contamination of the surface and site with general and hazardous waste are applicable to both alternative. The mitigation measures included in the EMPr must be complied with to achieve the post-mitigation significance rating of low .	
Air Quality	-6	-6
	Dust and emissions during construction generated by debris handling and debris piles, truck transport, bulldozing and general construction will exist for both the alternatives. The post-mitigation significance rating is low .	
Noise Construction	-5	-5
	During the construction phase there is likely to be an increase in noise pollution from construction vehicles and construction staff. The post-mitigation significance rating is low .	
Heritage Construction	-5	-5
	Disturbance of graves and sites of archaeological, historical and cultural significance could take place during construction. The mitigation measures included in the EMPr must be complied with to achieve the post-mitigation significance rating of low .	
Traffic Construction	-5	-5
	During the construction phase there is likely to be an increase in traffic from construction vehicles. Construction vehicles are to avoid main roads during peak traffic hours and mitigation measures outlined in the EMPr are to be implemented. The post mitigation significance for both alternatives is low .	
Socio-economic Construction	+7	+7
	The development will result in a significant number of construction phase jobs for the local people. The significance rating is medium .	
	-5	-5
Construction staff and public safety during construction. The post mitigation significance is low .		
TOTAL	-66	-72
	+7	+7

Based on the comparative assessment of the two scheduling alternative options and the impact identification and assessment, it is evident that there is a difference in the negative impacts for the alternative options: -66 for scheduling Alternative 1 (construction during the non-rainy season) compared to -72 for Alternative 2 (construction during the rainy season).

Scheduling Alternative 1 (construction during the non-raining season) is regarded as the preferred scheduling alternative.

The majority of the negative impacts, which have contributed to the greater impact rating score for Scheduling Alternative 2, pertain to the increased risk of soil erosion during the rainy season.

10 ENVIRONMENTAL IMPACT STATEMENT

10.1 Conclusions

The findings conclude that there are no environmental fatal flaws that could prevent the proposed Flimieda X3 development if the recommended mitigation and management measures contained in the preceding chapter and EMPr (*Appendix F*) are implemented.

It is the opinion of Setala Environmental that there are presently no environmental impacts emanating from the proposed activity that cannot be adequately managed. The management of the negative impacts will require the implementation of the necessary mitigatory measures detailed in the EMPr (refer to *Appendix F*) of this report.

10.2 Recommendations

Based on the assumption that the mitigation measures will be effectively implemented for the proposed project and its associated infrastructure and that no fatal flaws have been identified to date, it is the opinion of the EAP that this activity should be authorised to proceed to the final stages of decision making.

In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through practical measures, the recommendations from this EIA study are included within an EMPr (*Appendix F*).

The EMPr must be used to ensure compliance with environmental specifications and management measures. The implementation of this EMPr for the life cycle phases of the project is considered to be vital in achieving the appropriate environmental management standards as detailed for this project.

The proponent must appoint a suitably experienced (independent) Environmental Control Officer (ECO) for the construction phase of the development that will have the responsibility to ensure that the mitigation / rehabilitation measures and recommendations are implemented and to ensure compliance with the provisions of the EMPr.

10.3 Proposed Duration of Environmental Authorisation

If granted, the environmental authorisation is required for a period of at least five years.

It is envisaged that the construction period will be concluded and post construction monitoring requirements will be finalised approximately five years after commencement of the activity. At present a commencement date has not been finalised.

10.4 Assumptions, Uncertainties and Gaps In Knowledge

The assessment contained in this report as well as the recommendations made are based on the assumption that it does not replace or nullify any other spheres of legislation that may apply to any or all aspects of the proposed development.