



SPECIALISING IN: INFRASTRUCTURE DEVELOPMENT & PLANNING

ENVIRONMENTAL PLANNING: APPLICATIONS, EXEMPTIONS, EIA, EMPR, WATER USE & WASTE LICENSES
AUDIT: ENVIRONMENTAL CONTROL MONITORING & OCCUPATIONAL HEALTH & SAFETY
MINING RIGHTS, PERMITS, PLANS, COMPOSTING & RECYCLING FACILITIES
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INFORMATION TECHNOLOGY (SUPPORT SERVICES & INFRASTRUCTURE)

22 FEBRUARY 2021

DRAFT BASIC ASSESSMENT REPORT

PROJECT TITLE: PROPOSED SOCIAL HOUSING DEVELOPMENT ON PORTION 435 OF THE FARM TOWN AND TOWNLANDS 435 IQ ERF 2 -18 AND 56 -102 IN DASSIERAND TOWNSHIP, JB MARKS LOCAL MUNICIPALITY – NORTH WEST PROVINCE

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APPLICANT: JB MARKS LOCAL MUNICIPALITY

ENVIRONMENTAL ASSESSMENT PRACTITIONER:

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GENERAL TERMS AND ABBREVIATIONS:

CLIENT	JB Marks Local Municipality
DEDECT	Department of Economic Development, Environment, Conservation and Tourism
EIA	Environmental Impact Assessment
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EMP	Environmental Management Plan
EMPR	Environmental Management Programme
EA	Environmental Authorisation
DWS	Department of Water and Sanitation
WULA	Water Use License Application
WUL	Water Use License
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
NEMPAA	National Environmental Management Protected Areas Act, 2003 (Act No. 57 of 2003)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)
MPRDA	Minerals & Petroleum Resources Development Act, 2002 (Act No.287 of 2002).
NEMAQA	National Environmental Management Air Quality Act, 2004 (Act 39 of 2004).
WETLAND	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is



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	periodically covered with shallow water, and which land in normal circumstances support or would support vegetation typically adapted to life in saturated soil.” In addition to water at or near the surface, other distinguishing indicators of wetlands include hydromorphic soils and vegetation adapted to or tolerant of saturated soils (DWA, 2005)
WATERCOURSE	A watercourse includes a river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake, pan or dam, into which or from which water flows; any collection of water that the Minister may declare to be a watercourse; and where relevant, its beds and banks.
WATER RESOURCE	Water resource includes a watercourse, surface water, estuary or aquifer.
DEVELOPMENT SITE	Boundary and extent of development works and infrastructure.



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SECTION I: INTRODUCTION

C & K Environmental Services (Pty) Ltd has been appointed by Inkwili Housing Development on behalf of JB Marks Local Municipality to conduct an Environmental Impact Assessment process for the proposed Social Housing Development on Portion 435 of the farm Town and Townlands 435 IQ erf 2-18 and 56-102 in Dassierand Township, JB Marks Local Municipality, North West Province.

1.1 Project description

The project entails a development of 1200 Social Houses for the communities of Dassierand. The site area is approximately 137500m² (13 hectares). The building footprint area is approximately 20994.8m², and parking bays at approximately 1200 m² in size. The total built-up area is proposed at 20891.8m², with a total coverage of 35% (48125 m²).

The proposed development will comprise of 4 blocks of residential units (Block A – D), gate house, refuse room, caretaker house, tuck shop, creche, car wash and a laundry area.

1.2 Site locality

The study site lies south-west of Russell Street in Dassierand Township, which is situated south-west of Road R53 in Potchefstroom.

Site Coordinates:

26°41'37.12" S 27°04'19.39" E

26°41'32.03" S 27°04'08.18" E

26°41'48.46" S 27°04'11.04" E

26°41'44.32" S 27°04'17.88" E

Surveyor-general 21-digit code: T0IQ0000000043500000

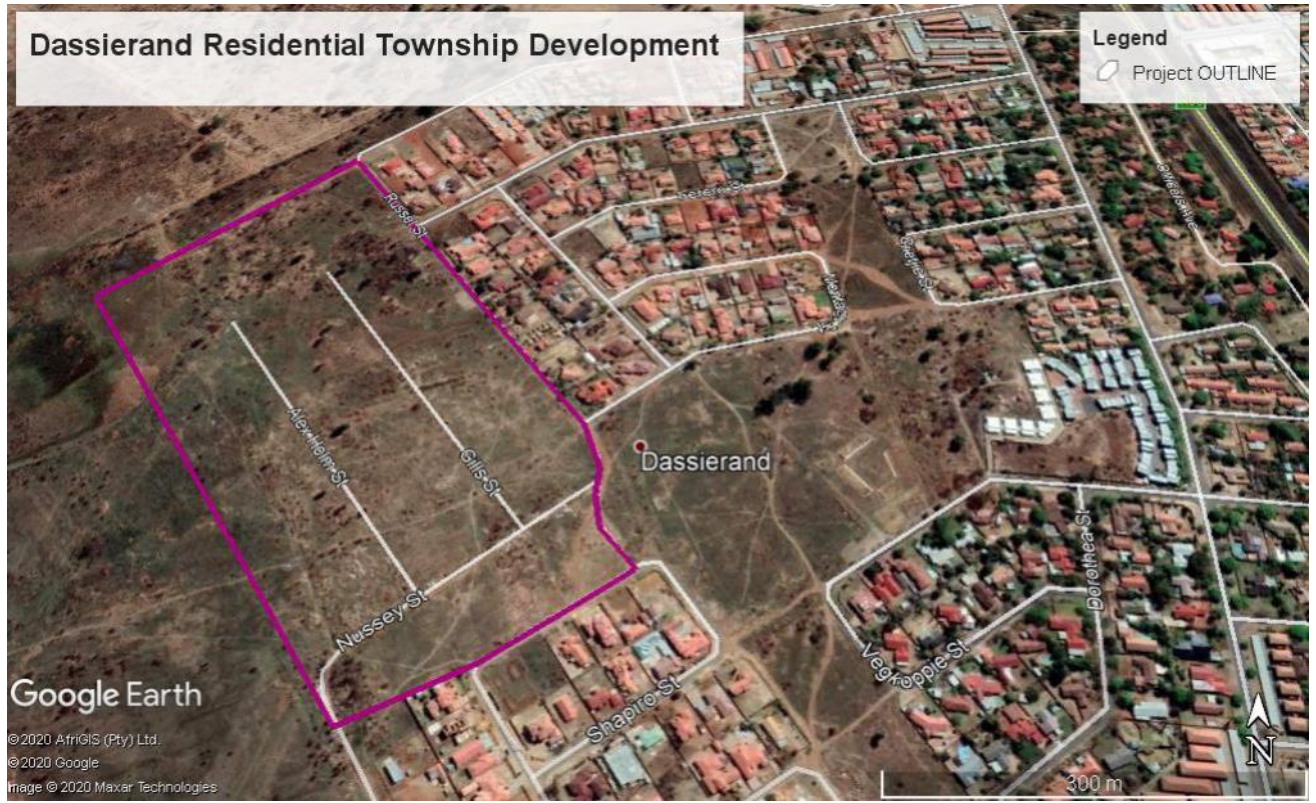
Locality Map below (proposed site marked in pink):



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Development footprint and dimensions:

AREA SCHEDULE	UNITS
SITE AREA	137500 m ²
BUILDING FOOTPRINT AREA	20994.8m ²
FLOOR AREA	49733.8m ²
PARKING BAYS	1200
TOTAL BUILT-UP AREA	20891.8m ²
PERMISSIBLE COVERAGE	35% = 48125 m ²
ACTUAL COVERAGE	$\frac{20994.8m^2}{137500 m^2} \times 100$ = 15.2%
FAR	$\frac{49733.8m^2}{137500 m^2} \times 100$ = 36.2%
BULK FACTOR	THREE STOREYS (9m height)
DENSITY	$\frac{SITE AREA}{UNITS} = \frac{137500 m^2}{1200}$ = 1 UNIT per 31.25m ²

1.3 Purpose of the Draft Basic Assessment Report

The purpose of this Draft Basic Assessment report is to holistically identify all the potential issues and impacts from activities associated with the proposed development.

This Report will therefore contain all the information that is necessary for an adequate understanding of the nature of issues or impacts associated with this proposed project. The report will focus on identifying the impacts on the physical and biological environment and to some extent the social environment, along with the impact mitigation thereof.

The planning and eventual construction and operation of the proposed township development represents the legal trigger for a Basic Environmental Impact Assessment (EIA) process to followed; in terms of the List of Activities and Competent Authorities identified in the National Environmental



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Management Act (Act No. 107 of 1998) (NEMA), EIA Regulations of 2014, GNR 326 published on 07 April 2017.

LISTED ACTIVITIES	
National Environmental Management Act (Act No. 107 of 1998) Regulations	
Listing 1, GNR 327 of 7 April 2017:	Description of the relevant activity as per Listing Notice 1
Activity 1	The development of facilities or infrastructure for the generation of electricity from a renewable resource where (i) the electricity output is more than 10 megawatts but less than 20 megawatts; or (ii) the output is 10 megawatts or less but the total extent of the facility covers an area in excess of 1 hectare.
Activity 9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve...
Activity 12	The development of (xii) infrastructure or structures with a physical footprint of 100 square metres or more; Where such development occurs, (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;
Activity 27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
Activity 30	Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
<p>The development further requires a Water Use Licence in terms of the Section 21 of the NWA. Section 21 (c) and (i) is applicable to any activity related to a wetland:</p> <ul style="list-style-type: none"> • Section 21(c): Impeding or diverting the flow of water in a watercourse; and • Section 21(i): Altering the bed, banks, course or characteristics of a watercourse. <p>Authorisations related to wetlands are regulated by Government Notice 509 of 2016 regarding Section 21(c) and (i). This notice grants General Authorisation (GA) for the above water uses on</p>	



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certain conditions. This regulation also stipulates that water uses must be registered with the responsible authority. Any activity that is not related to the rehabilitation of a wetland and which takes place within 500 m of a wetland are excluded from a GA under either of these regulations, unless the impacts score as low in the requires risk assessment matrix (DWS, 2016). Such an activity requires a Water Use Licence (WUL) from the relevant authority.

NB: An application will be lodged with DWS to ensure that all approvals are in place before any activity can commence on site.

1.4 Environmental Assessment Process followed:

- Terrain assessment of the physical, historic and biological environmental components of the site was undertaken in order to determine which areas would be most suitable for development with least environmental impacts.
- The Public Participation Process in terms of Regulation 41 as published in Government Notice 326 under Chapter 6 of the National Environmental Management Act, 1998 (Act No. 107 of 1998) as amended.
- Assessment of issues related to social aspects of directly affected landowner and properties. The anticipated impacts and issues, both positive and negative were identified in order to determine their potential significance and the need for further assessment during the subsequent EIA process.
- The following specialist studies have been identified to being crucial for the site and some conducted and included in this Draft Basic Assessment Report:
 - Flora assessment and Wetland assessment;

1.5 Alternatives considered

- No site alternatives considered; however, technology and other best practice methods will be considered.
- No layout alternatives considered, the proposed site is vacant and will be able to accommodate the development.
- No activity alternative considered as the proposed development will form part of developing the Township both socially and economically.
- Technology alternatives for noise and designs associated with proposed project during the construction phase will be taken into consideration during the planning phase (Solar panels, rain water harvesting options).
- The wetland area will not be impacted on, all activities will be undertaken outside the buffers as per the Wetland Specialist recommendations.



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SECTION 2: ENVIRONMENTAL DESCRIPTION

2.1 Regional vegetation

The study site lies in the quarter degree square 2627CA (Potchefstroom). Mucina & Rutherford (2006) classified the area as Rand Highveld Grassland, a highly variable landscape with extensive sloping plains and a series of slightly elevated ridges. The vegetation is species-rich, wiry, sour grassland, low sour scrubland on rocky outcrops and steeper slopes. Typical herbs mostly belong to the Asteraceae and rocky ridges carry sparse woodlands with *Acacia caffra* and *Celtis africana* accompanied by a rich suite of shrubs with the genus *Searsia* most prominent. The area comprises quartzite ridges supporting shallow soils on rocky ridges and soils of various quality elsewhere. No threatened plant species are known to occur in the 2627CA.

It is a warm-temperate region with strongly seasonal summer rainfall with very dry winters and frequent winter frosts. This vegetation unit is considered endangered. Its conservation target is 24%. Poorly conserved (only 1%) in statutory reserves and a few private nature reserves. Almost 50% of the unit is already been transformed by cultivation, plantations, urbanization and dam-building.

Four vegetation study units were identified on the study site:

- Old cultivated fields;
- *Vachellia* – *Asparagus larycinus* mixed vegetation; the *Vachellia* – *Asparagus larycinus* mixed vegetation study unit is not considered sensitive.
- Wetland; and
- Totally destroyed built-up area.

A Wetland Specialist was consulted and confirmed, the wetland unit does not have suitable habitat for any Protected trees listed in terms of the National Forests Act, 1998 (Act No. 84 of 1998), or for plants protected in terms of the North West Biodiversity Management Act, 2016 (Act No. 4 of 2016).

2.2 Wetland

General:

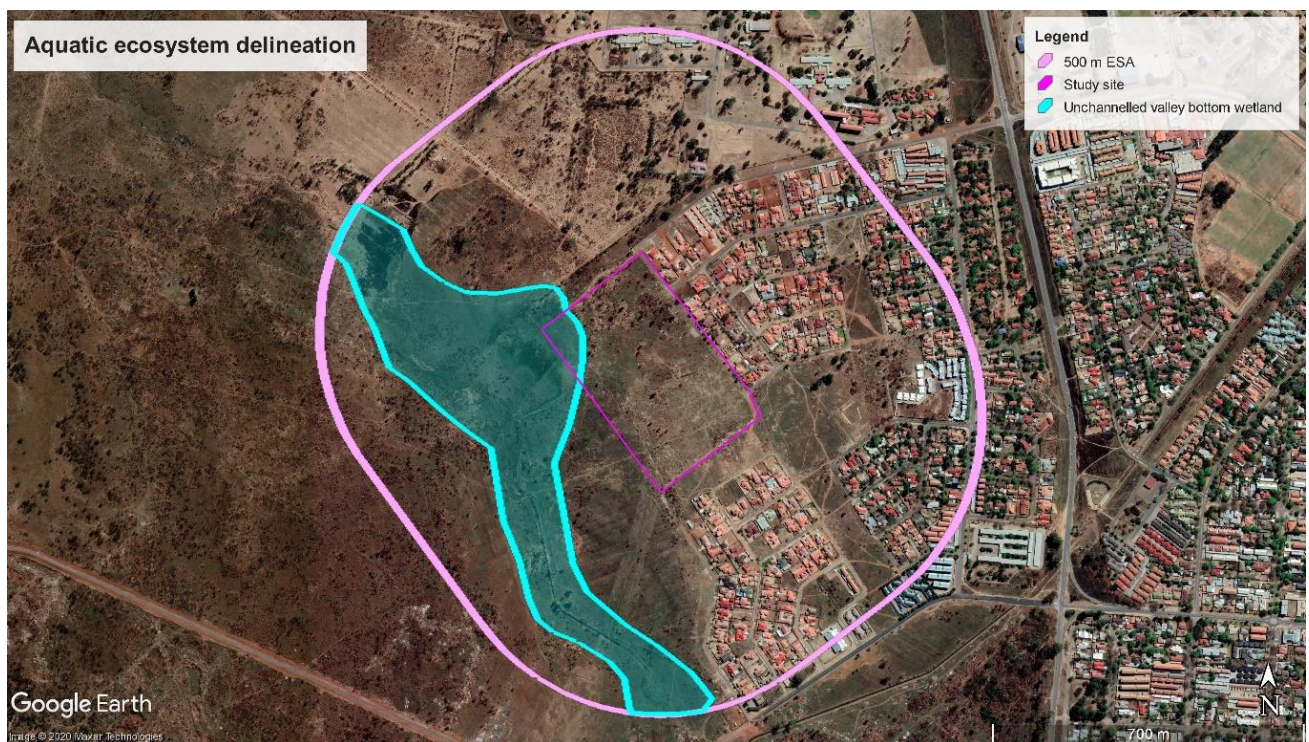
Several large rivers have their sources in the region, e.g. Vet, Modder, Riet, Vaal, Olifants, Steelpoort, Marico, Crocodile (west), Crocodile (east) and the Great Usutu,

- Mean annual precipitation: Rainfall varies from low to moderately high, with an increase from west to east.
- Coefficient of variation of annual precipitation: Moderately high in the west, decreasing to low in the east.
- Drainage density: Mostly low, but medium in some areas.
- Stream frequency: Low to medium.

- Slopes <5%: >80%, but 20-50% in a few hilly areas.
- Median annual simulated runoff: Moderately low to moderate.
- Mean annual temperature: Hot in the west and moderate in the east.

Catchment: According to the Department of Water Affairs Resource Quality Services (RQS) department, the site lies in quaternary catchment C23H has a mean annual precipitation of 603 mm and mean annual runoff of 23.4%. The study site drains to the Vaal River via the Mooi River system.

An open site with signs of anthropogenic impacts (current and historical) with an unchanneled valley bottom wetland was observed along and in the western edge of the site. Image below indicating the wetland on site.



The list of impacts to the wetland on the study site and adjacent areas:

- Historical use of the site,
- Alien vegetation establishment and expansion,
- Road crossing of the system,
- Dumping and litter expansion,
- Sewage leaks,
- Urbanisation of the catchment of the system,
- Frequency of fire events.



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2.3 Geology

According to the Department of Agriculture's Global Information Service (AGISI). The study site lies within the Bc25 land type, which is characterised by red and yellow, eutrophic, apedal soils with plinthic subsoils (plinthic soils comprise >10% of land type, red soils comprise >33% of land type). Further on observation that rodent animals formed a habitat within the site and soil is deep and soft with well drained texture.

Geotechnical investigations were conducted, and the conclusion was that the proposed infrastructural development at the construction site is feasible (from an engineering geological / geotechnical standpoint). All indications are that conventional engineering and construction methods can be utilised, albeit with some technical modifications. Our findings are based on a set of results obtained during our field work on site (coupled with the interpretation of the generated geotechnical information).

Constraints (such as potential consolidation and collapse settlement, compressibility, foundation settlement and excavation challenges), which carry a moderate- to low-level of risk, and which shall require some consideration by the structural and design engineers. The potential volume change (expansiveness) of the soils found at the proposed construction site is considered marginally low. Our final results indicate that the soils prevalent on site have a provisionally, very low potential volume change. Since the foundation indicator tests show a generally low activity class rating and/or low potential expansion, the soils found on site where not subjected to a heave classification.

2.4 Land use

Land capability is a broad system of categorising land based on issues such as soils, climate, erosion hazard and slope. It considers the risks of land damage from erosion and other causes; and the difficulties in owning land owing to physical land characteristics. Land capability classes are interpretive groupings of land units with similar potentials and continuing limitations or hazards. Land coverage, on the other hand, is the degree to which particular uses dominate the landscape.

The following are the types of popular land uses within the municipality.

- Plantations;
- Water bodies;
- Mines;
- Degraded and Cultivated land; and
- Built up and Natural Land.



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2.5 Topography

The study site is located where the western and eastern parts of the landscape form a valley bottom. The topography is flat with little variance. Most of the site slopes in a western direction.

2.6 Heritage

There were no signs of any culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site; however, should any elements be discovered during the construction phase, the relevant Heritage Resources Department will be notified.

2.7 Site Photographs





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SECTION 3: DEMOGRAPHICS

3.1 Population dynamics

JB Marks Local Municipality was established by the amalgamation of the Ventersdorp Local Municipality and Tlokwe City Council Local Municipality in August 2016. Population dynamics within the municipality. This includes the total population and growth rate, the gender breakdown of this population and total number of households.

The sex ratio provides an indication of the gender breakdown in an area, and it is suggestive of the composition of the labour force. Sex ratios will be affected by sex-selective out-migration such as men migrating. Migrant labour-receiving areas usually have higher sex ratio figures (i.e. more males to females) as the migrants are usually male. South Africa's average sex ratio is around 0,95, that is 95 men to 100 women. Lower sex ratios are found in areas with a higher number of female-headed households, where household sizes are generally larger, with higher dependency levels.

The distribution of the population by age is also provided in the figure below with age groups including those younger than school-going age (0-4 years), school going (5-19 years), youth (20-29), general working age (30-64) and elderly (over 65 years of age).

Housing is one of the important services provided by the municipality, which is also an indicator of development. 63 per cent of houses in the municipal area are classified as formal while about 10 percent of houses are in informal settlements. About 7 per cent of households reside in flats or apartments while the same percentage stays in backyards.

3.2 Spatial development

The District Spatial Development Framework (SDF) is to a large extent based on the proposals of the PSDF (Macro SDF framework for the District) as well as inputs from existing municipal SDF's. As far as JB Marks Local Municipality' is concerned, some of the broader proposals were incorporated. Special emphasis was placed on the development of the N12 Treasure Corridor between Matlosana in terms of the optimization of benefits that could emanate from potential projects on the corridor. Development Zone Four will largely concentrate on future sustainable development approaches in terms of sustainable development spending. This will be achieved by focusing on rectifying development imbalances relating to equitable access to basic services, the protection of the natural and cultural resources and spatial form that promotes greater efficiencies in land use and service provision.

The basic principles underlining the spatial vision within the area includes the following:

- Enhancement of JB Marks Local Municipality in its capacity as one of the primary regional nodes within North West Province, as well as a priority investment area situated on the N12 Treasure Corridor and N14 corridor.



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- Management towards sustainable development. Sustainability here specifically means the cost-effective provision of services; the creation of job opportunities in close proximity to natural resources and the market and the protection and sustainable use of the natural environment.
 - Reducing imbalances of the past through concentrating employment opportunities in areas with sustainable development potential, reducing the mismatch of where people have to live and work.
 - Containing urban sprawl by providing development guidelines for the creation of compact quality urban spaces serving dense residential areas.
 - Urban integration and urban infilling through the enhancement of urban linkages along mixed land-use corridors and nodes in order to reduce long-distance travel.
 - Residential intensification through more efficient use of urban land and higher density residential development.
 - Creating quality well balanced urban environments, which are convenient, attractive and safe
- JB Marks Local Municipality will embrace the following in line with the development perspective.



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SECTION 4: PUBLIC PARTICIPATION PROCESS

A public participation process was conducted as part of the Environmental Impact Assessment process. During the process, all stakeholders and Interested & Affected Parties are provided an opportunity to participate and voice their concerns, both positive and negative. Those concerns and comments are then considered in the evaluation process by the Competent Authorities (DEDECT).

The public participation process aims to enlighten the public on the positive and negative aspects that the proposed development will have on their immediate surroundings. The applicant is required to mitigate impacts to an acceptable status, the significant impacts, as well as consider suitable alternatives as identified during the process.

4.1 Objectives of the public participation process

The public participation process has the following objectives:

- To inform Interested and Affected parties of the proposed development;
- To provide an opportunity for I&AP's to raise environmental issues/concerns and make suggestions;
- To promote transparency and an understanding of the project and its consequences;
- To serve as a structure for liaison and communication with I&AP's;
- To serve as a data gathering mechanism (of local knowledge) for the Environmental Study.
- To identify issues that can easily be overlooked in the initial stages of planning.

To summarise, the objective of the on-going public participation process is to promote openness and transparency concerning the proposed development, during the length of the project. The process should by no means be regarded as a vehicle to temper opposition or objections. Any conclusions agreed upon must be socially, financially and technically acceptable and feasible in order to meet the requirements of both the NEMA Regulations and the vision of the applicant. The aim is to identify all I&AP's and remain in contact with them during the EIA.

4.2 Guidelines followed during the public participation process

The Public Participation Process (PPP) for this project was conducted by C & K Environmental Services (Pty) Ltd; and undertaken strictly according to the Regulations listed under Chapter 6 National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended. The process was open and transparent.



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4.3 Public participation process undertaken

The Public Participation Process (PPP) for this project was undertaken strictly according to the Regulations listed under Chapter 6 of the NEMA EIA Regulations. The process was open and transparent to all interested and affected parties (I&AP's).

The following public participation process was conducted for the proposed development (in summary):

- **Identification of key Interested and Affected Parties.**

I&AP's were identified by means of a site visit and consultation with property owners that are in close proximity to the proposed development site. It is acknowledged that the list of registered I&AP's may be extended as the process progresses. I&AP's were given platform to comment and raise issues regarding the proposed development.

- **Compilation and distribution of the Background Information Document (BID) to adjacent property landowners within a 100m from the proposed development.**

The aim of a BID was to provide all I&AP's with a brief description of the proposed development. The BID contained the details of the applicant and the environmental consultant. Furthermore, it serves as an overview of the public participation process.

C & K Environmental Services (Pty) Ltd provided the I&AP's with an email address, cellphone line and fax number if they had any suggestions or comments, target streets were Russell and Shapiro.

- **Placement of newspaper advert informing the public of the proposed development.**

Please refer to Public Participation Appendices for a copy of the newspaper advert that was published on the "Citizen" on 12 February 2021.

- **Placement of site notices.**

A strategic position was chosen on site to place the notice. One (1) site notice was placed on site on the 11 February 2021. Proof of site notice placement is attached as Appendices (Public Participation Information).

- **Receiving written comments from I&AP's to address in the reports.**

Comments from the relevant stakeholders are anticipated within 30 days from the day of the commencement of the Public Participation on the 12 February 2021. Some of the comments received are tabulated below:



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Name of I&AP	Comment	EAP response
Benedictor Mdaka	My name is Benedictor Mdaka a resident of Dassierand. Could you please register me as I&AP regarding the matter above and please email me a copy of the full BA report so as to familiarize myself with the contents and to be able to make comments.	Kindly note that you have been registered as an Interested and Affected Party for the Proposed Dassierand Social Housing EIA. You will be informed when the Draft BAR is available for comments at the nearest Library or school or our office
Johan Vermeulen	Attached find details of interested and affected party. Cell. 082 789 3545 Office. 082 578 3516 Email. johan@baywindtrading.co.za	will forward the link with all the reports for your review and comments.
Kasa Ntaopane	Please forward me the site plan indicating all the corners of the proposed development.	Site locality plan forwarded to the I&AP on the 18 February 2021.



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SECTION 5: RESOURCE USE AND PROCESS DETAILS

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES	
If yes, what estimated quantity will be produced per month?	25 m ³	

How will the construction solid waste be disposed of (describe)?

The solid construction waste will be collected by a registered waste management contractor/the local municipality. This recommendation will be included in the EMPr and implemented during the construction phase.

Where will the construction solid waste be disposed of (describe)?

Disposal of construction waste will only be at a registered waste disposal site; this will be included in the EMPr on the waste management section to ensure that it is implemented.



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SECTION 6: ENVIRONMENTAL IMPACT ASSESSMENT

The description and identification of anticipated impacts is based on the listing of environmental aspects. Environmental aspects, for the purposes of this document, is the term used to describe the actions that may have an impact on one or more of the environmental components listed. It is important to note that aspects that are clearly definable have been used in preference to those that are duplicative, redundant, difficult to measure, and/or obscure.

An impact is defined as any change in the physical, chemical, biological, cultural, and/or socio-economic environmental system that can be attributed to human activities relative to alternatives under study for meeting a project need. Therefore, the identified environmental aspects are said to have an impact on the components listed above if they result in change.

One of the most important objectives of conducting an Environmental Impact Assessment is to identify and evaluate these aspects and impacts. Consequently, the Environmental Management Programme (EMPR) will consist of the preferred mitigation and management options for the identified impacts assessed as being significant. These will be described within the EIA (and EMPR) report to follow.

The environmental aspect and the resultant impact can become manifest during the **construction phase (c)** and/or the **operational phase (o)** which is the stage when the proposed integrated housing development is complete and fully functional.

The largest (negative – bio-physical and positive – socio-economic) impacts resulting from the environmental aspects are anticipated during the construction phase, while the **significant positive impacts** (socio-economic) will manifest during the operational phase. Therefore, the mitigation measures that are implemented during the construction phase especially should serve to sufficiently alleviate the temporary, negative impacts and optimise the positive impacts caused by the construction activities.

The following table provides a list of activities (environmental aspects) that will occur on site and it provides an outline of the potential impacts that these actions will have on the environment, the anticipated effects on the biophysical and social aspects.

The identification of the aspects and impacts may be expanded as more information becomes available when the specialist studies in fauna and heritage assessment is completed. At this stage, the table below provides a list of impacts and issues.



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6.1 methodology utilized in the rating of significance of impacts that may result from the **CONSTRUCTION** and **OPERATIONAL** phase

The objective of the impact assessment is to thoroughly identify potential impacts associated with the proposed development both positive and negative. The identified impacts are therefore evaluated in terms of their significance. This assessment is of a systematic analysis framework to evaluate the nature, extent, duration, intensity; probability and significance of the various impacts are considered either with or without mitigation and management measures.

There are several biophysical and social issues that can be expected as a result of the proposed development. Some of the issues are localised in their effects, whilst others could influence a more widespread area. The aim of this basic assessment report is to ensure that issues are identified, assessed and mitigation measures be proposed.

The identification and brief descriptions of the relevant physical, biological, socio-economic and heritage issues include:

- Environmental aspects: defined as those actions on site that may potentially have an environmental impact.
- Environmental component to be impacted upon.
- Locality / applicable zone of the impact.
- Nature and description of the impact or issue.

An impact significance rating and evaluation, for the listed aspects, will form part of the BAR process/report to follow the environmental process. The methodology of impact assessment and its significance rating will be indicated below.

Most of the identified and anticipated negative impacts listed below will only take effect once the construction phase of the development commences; the main period of positive impacts occurrence is during the long term “operational” phase of the development when it is felt that the broader community will benefit from the project in terms less travel times to a service stations locally, once the proposed filling station is complete and fully functional.

An impact significance rating and evaluation, for the listed aspects, will form part of the BAR process/report to follow the environmental process. The methodology of impact assessment and its significance rating will be indicated below.

Significance is determined through a synthesis of the various impact characteristics and represents the combined effect of the extent, duration, intensity and probability of the impacts.

- No significance, the impact is not substantial and does not require any mitigatory action.
- Low, the impact is of little importance, but may require limited mitigation.
- Medium, the impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.



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- High, the impact is of great importance. Failure to mitigate, with the objective of reducing the impact to
- Acceptable levels could render the entire development option or entire project proposal unacceptable. Mitigation and management are essential.

6.2 Potential impacts

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Soil erosion	Negative	<ul style="list-style-type: none"> • Movement of machinery along and within the proposed site should be restricted to only that which is necessary for construction. • Erosion control must be implemented along access roads. • Construction is only allowed within the proposed site. 	Low	Physical disruption of the natural terrain.
Soil contamination	Negative	<ul style="list-style-type: none"> • All heavy machinery must be serviced and fixed on solid concrete surfaces or away from the construction site. • The machines have to be provided with drip trays for overnight oil leaks monitoring. 	Low	Impacts on soil, land use and land capability.



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		<ul style="list-style-type: none"> • No dumping or burying of waste is permitted. • On site toilets is not allowed to use deep pit systems. • Portable toilets have to be emptied by removal and not dumping of waste. • Cement batching must take place on an impermeable surface. • Drip trays must be utilized for vehicle or machinery maintenance where the risk of oil spillages is highly likely. 		
Increase establishment of alien and invasive plant species.	Negative.	<ul style="list-style-type: none"> • The appropriate agency should implement an ongoing monitoring and eradication programme for all invasive and weedy plant species growing within the servitude. 	Low	Impact on patches of indigenous vegetation.
Visual / Aesthetic impact	Negative	<ul style="list-style-type: none"> • All construction waste has to be removed from site and taken to a registered disposal site. 	Low	Visual outlook of the surrounding.
Noise pollution	Negative	<ul style="list-style-type: none"> • All vehicles have to abide by a speed limit set by the management party 	Low	Noise and disturbance of peace to residents.



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		<p>of the contractor around and near the proposed site.</p> <ul style="list-style-type: none"> • Work hours should be limited to daily hours e.g. from 7:00am to 17:00 pm. • Vehicles have to be maintained to prevent unattended vehicles from making excessive noise due to mechanical faults. General rules such as no unnecessary use of the truck horns should be implemented. • The above must be implemented as the development is within residential area. 		
Air pollution	Negative	<ul style="list-style-type: none"> • Dust should be controlled by the regular wetting of soil surfaces used by vehicles (construction vehicles) such as access roads. This measure will be included in the EMPr to ensure implementation. 	Low	Air pollution and visual pollution.
Cultural or Historical site impacts	Negative	<ul style="list-style-type: none"> • Should any archaeological artefacts be encountered, all works must be suspended, and 	Low	Impact on heritage and cultural features.



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		relevant Heritage Department be contacted.		
Social and Economic impacts	Positive	<ul style="list-style-type: none"> Temporary job opportunities will result from proposed development. These opportunities are usually limited to the contractor workforce and usually do not involve the greater community except if the contractor sources his workforce from the community. This employment will only provide work on a short-term basis until construction is completed. 	High	Community upliftment
Safety and security	Negative	<ul style="list-style-type: none"> It is noted that the construction phase may result in potential increase in crime. It is therefore recommended that a community liaison officer is appointed to liaise between the contractor and community during the construction phase. It is also recommended that a community 	Low	Community unrest



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		<p>police forum is established if not currently available to assist in the smooth running of the construction phase.</p>		
Stormwater management.	Negative	<ul style="list-style-type: none"> • A stormwater management plan must be compiled and adhered with by the appointed contractor during the construction phase. • Proper stormwater designs must be implemented to ensure effective stormwater management during the operational phase. 	Low	Flooding within the proposed site and soil erosion
Traffic congestion	Negative	<ul style="list-style-type: none"> • Placing of traffic and/or construction warning signs and flag personnel within visible areas during construction. 	Low	Increase in traffic volumes.
Wetland encroachment	Negative	<ul style="list-style-type: none"> • The watercourse area should be demarcated and zoned "NO GO AREA" • The application of a buffer around the unchannelled valley bottom wetland, 	Low	Natural wetland degradation.



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		<ul style="list-style-type: none"> • The use of only endemic indigenous plants for the landscaping of the development, • Storm water management on site must take cognisance of possible pollution arising from the site, with emphasis on hydrocarbon pollution. This must also include the mitigation of speeds of storm water entering the wetland from the study site. • The incorporation of sustainable urban drainage systems in the storm water designs, • Signage must also be included to increase awareness of the wetland found on site, • Allowance must be made for overtopping of the banks of the wetland during flooding events. Fencing of the site adjacent to the wetland area must be limited. • Increased bins for litter, combined 		
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		with signage indicating the use of the bins.		
Natural vegetation fragmentation and degradation	Negative	<ul style="list-style-type: none"> Where possible, trees naturally growing on the site should be retained as part of the landscaping. Measures to ensure that these trees survive the physical disturbance from the development should be implemented. A tree surgeon should be consulted in this regard. Dumping of builders' rubble and other waste in the areas earmarked for exclusion must be prevented, through fencing or other management measures. These areas must be properly managed throughout the lifespan of the project in terms of fire, eradication of exotics etc. to 	Low	Natural vegetation degradation



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		<p>ensure continuous biodiversity.</p> <ul style="list-style-type: none"> • Outside lighting should be designed to minimize impacts on important pollinators. All outside lighting should be directed away from sensitive areas. Fluorescent and mercury vapour lighting should be avoided and sodium vapour (yellow) lights should be used wherever possible. • An appropriate management authority (e.g. the body corporate) that must be contractually bound to implement the Environmental Management Plan (EMP and Record of Decision (ROD) during the operational phase of the development should be identified and informed of their 		
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		<p>responsibilities in terms of the EMP and ROD.</p> <ul style="list-style-type: none"> • All areas designated as sensitive in a sensitivity mapping exercise should be incorporated into an open space system. Development should be located on the areas of lowest sensitivity. • The open space system should be fenced off prior to construction commencing (including site clearing and pegging). All construction-related impacts (including service roads, temporary housing, temporary ablation, disturbance of natural habitat, storing of equipment/building materials/vehicles or any other activity) should be excluded from the open space 		
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		<p>system. Access of vehicles to the open space system should be prevented and access of people should be controlled, both during the construction and operational phases. Movement of indigenous fauna should however be allowed (i.e. no solid walls, e.g. through the erection of palisade fencing).</p> <ul style="list-style-type: none"> • Only indigenous plant species, preferably species that are indigenous to the natural vegetation of the area, should be used for landscaping in communal areas. As far as possible, plants naturally growing on the development site, but would otherwise be destroyed during clearing for development purposes, should 		
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		be incorporated into landscaped areas. Forage and host plants required by pollinators should also be planted in landscaped areas.		
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6.3 Evaluation of impacts in terms of significance

The evaluation of anticipated impacts has been done through a significance rating method that makes use of quantitative measures. Some impacts will bear relevance to the construction phase or to the operational phase while others will be applicable to both phases.

Significance assessment methodology:

Tables below provide a key to the qualification criteria used for impact assessment in terms of probability, intensity, geographic extent and duration.

Probability: Probability of impact occurrence

Rating	Explanation of probability
1 (Very low)	<10% chance of impact occurrence
2 (Very low)	10 to 20% chance of impact occurrence
3 (Low)	20 to 39% chance of impact occurrence
4 (Low)	30 to 49% chance of impact occurrence
5 (Moderate)	41 to 50% chance of impact occurrence
6 (Moderate)	51 to 60% chance of impact occurrence
7 (High)	61 to 70% chance of impact occurrence
8 (High)	71 to 80% chance of impact occurrence
9 (Very high)	81 to 90% chance of impact occurrence
10 (Very high)	91 to 100% chance of impact occurrence



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Intensity/severity: Intensity/severity of impact consequence

Rating	Explanation of intensity
1 (Very low)	Consequence if impact will be of no to very low level of harm/damage to the affected environmental component.
2 (Very low)	Same as above but of a little higher intensity.
3 (Low)	Consequence if impact will be of a low level of harm/damage to the affected environmental component.
4 (Low)	Same as above but of a little higher intensity.
5 (Moderate)	Consequence if impact will be of a moderate harm/damage to the affected environmental component.
6 (Moderate)	Same as above but of a little higher intensity.
7 (High)	Consequence if impact will be of high harm/damage to the affected environmental component.
8 (High)	Same as above but of a little higher intensity.
9 (Very high)	Consequence if impact will be of a very high or unacceptable harm/damage to the affected environmental component.
10 (Very high)	The affected environmental component will be completely destroyed due to the consequence if the impact.

Extend: Explanation of geographic extend of impact

Rating	Explanation of extend
1 (Site specific, no effect on any neighbours)	Direct and/or indirect impacts limited to site of development only.
2 (Site specific, affecting direct neighbour(s))	Direct and/or indirect impacts limited to site of development and one or more direct neighbouring sites.
3 (Neighbourhood)	Direct and/or indirect impacts affecting environmental elements on a neighbourhood level.
4 (Local)	Direct and/or indirect impacts affecting environmental elements within the local community, e.g. on municipality level.
5 (Regional / district)	Direct and/or indirect impacts affecting environmental elements within the region e.g. a



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	significant part of a province, a development corridor, the lowveld region, etc.
6 (Provincial)	Direct and/or indirect impacts affecting environmental elements on a provincial scale.
7 (> 2 provinces)	Direct and/or indirect impacts affecting environmental elements on more than a provincial scale, but not yet on a national scale. As a general guide: affecting more than 2 provinces.
8 (National)	Direct and/or indirect impacts affecting environmental elements on a national level, and/or affecting one or two neighbouring countries.
9 (Sub-continental / continental)	Direct and/or indirect impacts affecting environmental elements on a sub-continental or continental level.
10 (Global)	Direct and/or indirect impacts affecting environmental elements on more than a provincial scale, but not yet on a national scale. As a general guide: affecting more than 2 provinces.

Duration: Explanation of duration of impact

Rating	Explanation of duration
1 (Very short term)	Less than 4 months
2 (Very short term)	4 months to <1 year
3 (Short term)	1 year to <3 years
4 (Short term)	3 years to <9 years
5 (Medium term)	9 years to <27 years
6 (Medium term)	27 years to <81 years
7 (Long term)	81 years to <243 years
8 (Long term)	243 years to < 729 years
9 (Very long term)	729 years to < 2000 years
10 (Very long term)	2000 years or longer

Final impact significance rating

= probability rating + intensity rating + extend rating + duration rating / 4 Round off to the nearest whole number.



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Explanation of impact significance

Final impact significance rating	Impact significance	Explanation of impact significance
1-2	Very low	Impact would be negligible. In the case of negative impacts, almost no mitigation and/or remedial activity would be needed, and any minor steps which might be needed would be easy, cheap and simple.
3-4	Low	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and/or remedial activity would be either easily achieved or little would be required, or both.
5-6	Moderate significance	Impact would be real but not substantial within the bounds of those which could occur. In the case of negative impacts, mitigation and/or remedial activity would be both feasible and fairly easily possible.
7-8	High significance	Impacts of a substantial order. In the case of negative impacts, mitigation and/or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these.
9-10	Very high significance	Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and/or remedial activity to offset the impact at the spatial or time scale for which it was predicted.



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Impact significance ratings between parenthesis are given presuming that no mitigation measures are to be implemented during the construction or operational phase of the project (this would imply a worst-case scenario).

Impact significance rating not between parentheses is given presuming that mitigation measures as described in this document are implemented.

Project phase applicable	Probability	Intensity Severity /	Extent	Duration	SIGNIFICANCE RATING	Description of impact
Impact: Potential of soil pollution						
Construction	6	5	3	4	5	Improper disposal of paint, cement, tar and other building waste during the construction phase, and domestic waste during the operational phase may cause soil pollution. During the collection, transportation and storage of wastes during all phases' spillages may occur, which may lead to soil pollution. Spillages during construction and operational phases could also lead to soil contamination but manageable.
Impact: Soil compaction						
Construction	6	4	2	4	4	Soil compaction will occur in areas subjected to trampling by humans and vehicles (in the areas where humans and vehicles frequently move travel). During the construction phase soils at and around construction sites (roads, storm water retention berms, cable and pipe network), construction camps, storage areas and transport routes will become compacted.
Impact: Soil erosion						
Construction	5	5	4	4	5	Soil erosion could occur in areas where bare soil surfaces are exposed to the force of wind and water. During the construction phase, this includes clearing of the land in preparation for construction. Manner stored piles of cement or soil. Wind erosion leads to dust pollution. Poorly designed storm water outlets will result in increased surface runoff (volume and speed). This can create erosion gullies. To summarise, the main activities which may lead to erosion are excavation works and civil works i.e. site clearing and associated activities.



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Project phase applicable	Probability	Intensity Severity /	Extent	Duration	SIGNIFICANCE RATING	Description of impact
Impact: Water pollution due to on-site sanitation						
Construction	5	4	3	4	4	Improper sanitation for construction workers may lead to storm water and groundwater pollution.
Impact: Water pollution with waste and spillages						
Construction	5	3	3	4	4	<p>Improper disposal of paint, cement powder and other construction waste during the construction phase may result in surface (and especially groundwater) pollution.</p> <p>The collection, transportation and storage of wastes during the construction phase may result in spillages which may lead to soil and water pollution.</p> <p>Spillages during construction phase could lead to soil pollution.</p> <p>Improper disposal of used oil or other hydrologic fluids will cause pollution. However, no vehicle maintenance is anticipated to take place on site.</p>
Impact: Increased crime rates in the area						
Construction	5	4	3	4	4	Crime in the local community may increase due to the presence of construction workers, materials and machinery on site.



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Project phase applicable	Probability	Intensity Severity	Extent	Duration	SIGNIFICANCE RATING	Description of impact
Impact: Waste generation						
Construction	7	5	3	4	5	<p>Waste will be generated during the construction phase (construction waste e.g. cement bags, empty paint cans, etc.)</p> <p>Waste generated from the site preparations (e.g. overburdened material)</p> <p>Waste accumulation, collection, storage and disposal may cause littering, visual pollution, blockages of storm water, groundwater pollution, filling of scarce waste bins if not properly classified and release of unpleasant odours.</p> <p>Construction waste e.g. building rubble and cement may cause soil compaction.</p>
Impact: Increased traffic congestion						
Construction	5	4	3	4	4	<p>The general traffic of the area will increase the developer must ensure that road traffic safety requirements are met.</p> <p>Location of access points to and from the development so as to ensure that road traffic safety requirements are met.</p> <p>Implementation of appropriate traffic control measures, both in the design and layout of access points and during construction thereof.</p>



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Project phase applicable	Probability	Intensity Severity	Extent	Duration	SIGNIFICANCE RATING	Description of impact
Impact: Improper stormwater management						
Construction	4	3	3	2	3	Improper of stormwater management during the construction phase, and poor stormwater designs during the operational phase could lead to stormwater impacts such as flooding, soil erosion, runoff etc.
Impact: Wetland degradation						
Construction	4	3	3	2	3	Site preparations, civil work or extent of the development encroaching on the wetland area.
Impact: Loss of soil structure						
Construction	4	4	2	4	4	Soil handling may result in loss of soil structure, especially if topsoil is not handled and stockpiled appropriately.



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6.4 Environmental Impact Statement

An environmental impact statement and impacts that the proposal and its alternatives may have on the environment after the management and mitigation of impacts.

- It is apparent that these impacts will be medium to long term and have sustainable benefits. It must be ensured that the construction phase is undertaken in accordance of sustainable development principles, best environmental management practices and that post-construction rehabilitation leaves the surrounding environments in a good, if not better state.
- The proposed development should not result in impacts on the natural or social environment that are highly detrimental, nor result in undue risks to the natural environment. The nature and types of negative impacts do not outweigh the potential benefits of this project, provided that the short-term localized impacts of the construction phase are adequately mitigated. In this regard, an EMPr has been compiled and is attached to this report.
- It is recommended that external monthly EMPr monitoring takes place by an independent Environmental Control Officer (ECO) to ensure that the requirements of the EMPr are being correctly implemented, thus ensuring the protection of the surrounding environment during construction.
- Further, should any privately owned infrastructure (e.g. fencing) be damaged during construction, it is to be replaced in the same condition, if not better, by the contractor. After the construction phase the contractors must ensure that all hazardous materials if (any was produced) are removed from the site and that the site is rehabilitated to acceptable levels.
- Assuming that all phases of the project will adhere to the mitigation measures contained in the EMPr, the impacts associated with the development are mainly noise, traffic, dust and social impacts which have minimum significance.
- Positive impacts associated with the proposed development include:
 - Socio-economic growth and development,
 - Temporary employment opportunities and skills development,
 - Access to residential units,
 - Reduction of crime resulting from the open veld utilised as an escape area,



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SECTION 7: RECOMMENDATIONS OF THE PRACTITIONER

It is the recommendation of the EAP that the following management and mitigation measures be incorporated should an authorisation be issued or granted:

- All mitigation measures listed in the EMPr must be adhered to by the Applicant and subcontractors appointed by the Applicant.
- COVID-19 control measures must be implemented as per the requirements of the National Disaster Management Act.
- Compliance with the Occupational Health and Safety Act and Construction Regulations.
- A grievance procedure will be established whereby any complaints can be received, recorded and responded to appropriately.
- Fire extinguishers must be readily available onsite and easily accessible.
- An Emergency Response Plan must be in place for the site, which must clearly describe emergency procedures and include emergency contact numbers.
- There should be spill kit on site to ensure management of accidental hydraulic spills.
- No smoking may be permitted on site, but only at designated smoking area.
- There should be water trucks for regular dust suppression.
- The wetland area must be demarcated and tagged “NO GO ZONE”
- Chemical toilets must be provided for the use of the construction workers and must be regularly serviced.
- An Environmental Control Officer must conduct monitoring at the site once a month during construction until completion of the project.



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SECTION 8: APPENDICES

Appendix A: Locality Map

Appendix B: Layout Plan

Appendix C: Site Photographs

Appendix D: Public Participation Information

Appendix E: Specialist Studies

Appendix F: Environmental Management Programme

Appendix G: Curriculum Vitae of the EAP



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Appendix A: Locality Map

Attached



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Appendix B: Layout Plan

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Appendix C: Site Photographs

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Appendix D: Public Participation Information

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Appendix E: Specialist Studies

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Appendix F: Environmental Management Programme

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Appendix G: Curriculum Vitae of the EAP

Attached
