FINAL BASIC ASSESSMENT REPORT

PROPOSED RESIDENTIAL DEVELOPMENT OF THE SIYANQOBA TOWNSHIP ON THE FARM TWEEDAM 377 JS AND THE REMAINING EXTENT OF FARM LEEUWPOORT 283 JS, EMALAHLENI LOCAL MUNICIPALITY, MPUMALANGA PROVINCE

DEDET REF: 17/2/3N-317

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PROJECT INFORMATION

REPORT TITLE:	Basic Assessment Report
REPORT STATUS:	Final
PROJECT TITLE:	Proposed Residential Development of the Siyanqoba Township on the farm Tweedam 377 JS and the remaining extent of the farm Leeuwpoort 283 JS, eMalahleni Local Municipality, Mpumalanga Province
USER CLIENT (APPLICANT):	Vipcon (PTY) LTD Property Developers & Project Management
CLIENT (DEVELOPMENT PLANNER):	Terraplan Gauteng CC
ENVIRONMENTAL CONSULTANTS:	Wandima Environmental Services
MDEDET REFERENCE NUMBER:	17/2/3N-317
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REPORT COMPILATION RESPONSIBILITY

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EXECUTIVE SUMMARY

1. ACTIVITY INFORMATION

1.1 Background

Although 35 000 erven were developed since 2001, there is still a backlog of Housing facilities in the Emalahleni Local Municipality area. Backyard shacks increased in the last few years and additional funding was made available by the Mpumalanga Provincial Government to establish houses in this area. According to the 5 year financial management plan for 2013/2014 eMalahleni IDP, ±6 000 erven need to be provided by eMalahleni Local Municipality by the 2015/2016 financial year. To meet this demand, VIPCON Property Developers & Project Management intends to establish the Siyanqoba Township, on the Farm Tweedam 377 JS and the Remaining Extent of the Farm Leeuwpoort 283 JS in the eMalahleni Local Municipality, Mpumalanga Province.

1.2 Project description

The total proposed development area will be 602.8918ha, this will include residential erven, business area, schools, community facilities (19), 2 cemeteries, 3 stands that will be used by the municipality (eg: storage of water, a Waste Water Treatment Plant WWTP), and a park area. The size and number of stands for each activity is as follows:

Zoning	Number of erven	Size (ha)
Residential 1 (300m^2)	9 338	297,7062
Business 3	1	9,3698
Institutional	7	25,5137
Special – community facilities	19	5,0630
Special – cemetery	2	0,6960
Special – Municipality	3	6,4300
Park	11	117,6264
Public roads		140,4867
Total of development		602,8918

Right of way servitudes and conditions in the Title Deeds of remainder of Portion 1 of the Farm Leeuwpoort 283 J.S are accommodated in the layout plan. The ESKOM servitude and conditions contained in the Title Deed of the Farm Tweedam 377JS will be accommodated in the layout of the proposed township. The 2 dams and stream will be zoned as "Public Open Space" and the development will not affect this area. For the installation of services it would be necessary to cross the stream and a WULA will be submitted to the DWA for the crossing of the stream and discharging effluent water (Sec 21 (c), (i) & (g) of the National Water Act, Act no 36 of 1998) from the WWTP.

1.3 Listed activities according to EIA Regulation (2010), R545:

The proposed project will involve the transformation of approximately 620ha of vacant land into a residential township. The transformation of undeveloped, vacant or derelict land to institution and residential in terms of section 24 (2) of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the proposed residential development triggers Listed Notice 2, activity 15 under the GN 545, 2010, for the construction of residential township outside an urban area and where the total area to be developed is more than 20ha. An application to downgrade the scoping/EIA process to BA process was approved by DEDET (see attached Appendix E-2)

2. PROPERTY DESCRIPTION

2.1 Location and Particulars of Property

The proposed township development is located approximately 4,66km north of Witbank on the Farm Tweedam 377 JS and the remainder of portion 1 of the Farm Leeuwpoort 283 JS in the eMalahleni Local Municipality area of Mpumalanga Province. The proposed township development is situated less than 2 km from the established town Pine Ridge and the Klarinet Extensions. The R544 provincial road runs through the centre of the proposed site.

2.2 Current Land Use

According to the eMalahleni LUMS, 2010 the site is zoned as "Agricultural" where it is used for farming such as grazing and human settlement. The land use for the neighbouring areas are: Agriculture, Residential 1 and 4, Community facilities, Park, Business 3 and the most common land use in this region is mining specially coal mining.

2.3 Description of the Environment

2.3.1 Climate

The site is situated in the high veld of Mpumalanga where the area experiences a humid and hot weather during summer seasons. The winter season is dry, with relatively moderate temperatures during the day and cold temperatures at night. The coldest month is usually July. The Mean annual precipitation (MAP) is 650-900mm (average: 726mm).

2.3.2 Topography

The site is located in the eastern region of Mpumalanga, which is characterised by a gently undulating plateau with fairly broad to narrowly incised valleys such as the Olifants River valley (Musina & Rutherford, 2006). The general elevation of the area lies between 1 400m and 1 600m above mean sea level (amsl). The slope and drainage through the proposed site is from the south to the north-west. There are 2 dams and a vlei area in a spruit (Terraplan, 2014). According to the Geotechnical Report (Van Der Walt, 2014), steep slopes are present in the eastern portion of the site on the edge of the high ground (Koppie - Zone I of the Geotechnical Report). The remainder of the proposed development site has a gentle to moderate slope (2°-6°). The steep slopes are excluded from the development and this area is zoned "Public Open Space".

2.3.3 Geology and Soil profile

The study area is situated in the Central Block of the Witbank Coalfields. The coalfield lithologies comprise sediments of the Dwyka and Vryheid Formations of the coal-bearing Ecca Group, Karoo Supergroup. The sediments have been deposited on an undulating pre-Karoo age basement, which had a significant influence on the nature, distribution and thickness of the sedimentary formations and coal measures. The geology of the study area is dominated by near horizontally bedded successions of shales, sandstones and coal layers.

The soil in the upper reaches of the profile is probably erodible if subjected to high water velocity, as it is generally cohension less. Several small erosion "channels/gullies" were observed by Van Der Walt (Geotechnical Report, 2014). The presence of ferruginous concretions and ferricrete in the soil profile as well as the cemented nature and gleyed texture in the residual soils observed by the Geo-engineer, is an indication of a seasonal fluctuating water table.

The soils of the study area is characterised by generally shallow soils underlain by a hard plinthic horizon. The soils on the site have a relatively high clay content associated with the weathering of the schists and granites. The soils associated with this site range from moderately deep loamy to clay soils cultivated in the past to shallow soils, in some instances underlain by a well-developed ferricrete horizon, to rocky in places. The loam-clay soils semi-restrict easy infiltration of rainwater into the soil. Infiltrated water thus starts slowly percolating laterally through the soil profile along the aquitard. Most of this water is likely lost to evapo-transpiration over time. (Kgatle, 2014)

2.3.4 Vegetation

The area proposed for development is situated in Rand Highveld Grassland (GM11) and Eastern Highveld Grassland (GM12) which falls within the Mesic Highveld Grassland Bioregion in the Grassland Biome of Southern Africa. The vegetation is species rich, wiry, sour grassland alternating with low, sour shrub land on rock outcrops and steeper slopes. Most common grasses on the plains belong to the genera Themeda, Eragrostis, Heteropogon and Elionurus (Mucina & Rutherford, 2006). Although the vegetation types are considered as endangered the proposed development is planned on an area that is categorized according to the MBCP, 2006 as "No natural habitat remained" and "Least concern".

2.3.5 Surface water

There are 2 dams on the eastern part of the proposed development. The over flow of the last dam connects with the Blesbok Spruit stream which is flowing in a northern direction. The proposed development will not have a negative impact on the surface water if waste management measures are in place and if the sewer system will be managed properly.

3. PUBLIC PARTICIPATION PROCESS

3.1 Approach

A public participation process (PPP) was followed in according with the 2010 EIA regulations, GNR543, section 54. (See attached Appendix E for the PPP Report). This process was executed as follows:

- All possible Interested & Affected Parties (I&AP's) were contacted to register and give them an opportunity to meaningfully participate in the process from 01/11/2013 to 01/12/2013.
- The Draft BAR was available for review - 30 days for the public and 40 days for Registered Government Departments. The Draft BAR was available on Wandima ES website for download to review and at the Local Library.
- Contact was made with nearby property owners and key I&AP by handing out notices,
- E-mails was send to some of the persons that was not available at that time,
- Fixed site notice boards were placed along the property on the R544 road.
- A PPP meeting was held on 3 December 2013 and all issues are recorded in the PPP report.

3.2 Further Participation

After the 40 days for I&AP comment period, all issues raised are recorded and included in the Final BAR. The Final BAR is to be submitted to the Competent Authority for final review and to take a decision. After the decision has been made and an Environmental Authorization (EA) issued, the decision will be communicated to all registered I&AP's and will be afforded the opportunity to appeal against any decision.

4. IMPACT ASSESSMENT

Potential impacts of the activities on the biophysical and socio-economic components of the environment were analyzed which includes the Design/Preconstruction, construction, operational and decommissioning phases. Both negative and positive impacts were assessed; negative for mitigation of impacts and positive for enhancement the environment. The assessment also covered five (5) areas of specialization such as wetland, flood line, ecological/terrestrial study, heritage and civil engineering. The geo-technical engineering report was not available by the time that this document was compiled.

4.1 Findings of Specialists

The Specialist studies for the establishment and operation of the proposed township was undertaken to determine the possible impacts likely to arise due to the construction and operational phase. The findings of the three (3) specialists are summarised as follows:

4.11 Geotechnical Assessment

The Geotechnical Investigation divided the proposed site into 9 geotechnical zones as indicated on the Geotechnical Map in Appendix A of the Geotechnical Report, March 2014. Zone A has sub-outcrops and outcrops and engineers should take into consideration in the design of both foundations and services. Zone 1 consist of rock outcrops with steep slopes and is excluded from the development and is zoned public open space. The development in this area should proceed with caution. According to the geotechnical report, no potential unstable natural slopes occur on or in close proximity to the site. (see geotechnical report appendix D-6). **The site is considered suitable for the proposed township establishment and related high density residential development provided that the recommendations made in the report are adhered to and implemented.**

4.1.2 Surface and ground water

a) Dam water

There are 2 dams on the eastern part of the proposed development. The over flow of the last dam connects with the Blesbok Spruit which is flowing in a northern direction. **This area is zoned "Public Open Space" and the proposed development will not have a negative impact on the surface water if waste management measures are in place and if the sewer system will be managed properly.**

b) Wetland Assessment

Wetland indicators – terrain unit, soil wetness and vegetation, according to the DWA wetland delineation and assessment guideline were observed on the proposed site. The indicators found that the study area contains multiple wetlands. **The nature of the project is such that the dams and their supporting hydrology will be affected by the proposed development**. Therefore it would be necessary to apply for a water use licence or a general water use permit. (Find attached the wetland report compiled by Mr O. Kgatle, January 2014).

c) Flood line assessment

The flood line delineation was prepared for the 1:50 and 1:100 year flood of a tributary of the Blosbokspruit that is present on the proposed development. The available map and modelled water surface elevations respective flood lines for the 1:50 and 1:100 year events are estimated at 1492.71 and 1492.83 m amsl at the stream segment upstream. The flood levels do not encroach into existing developments as indicated by contours on the provided topographical map. Downstream of the 2 dams, flood lines are observed to be very close to infrastructure, though no encroachment is occurring. It occurs at the mid-segment of the tributary where flood levels range between 1460.57 to 1464.45m amsl for both the 1:50 and 1:100 flood events. It is recommended, by the specialist, that all infrastructure and construction related activities remain outside the maximum stipulated flood levels. (See the attached Flood line analysis report, compiled by Vipcon, 2014). **The layout plan was adjust to accommodate the recommendations.**

4.1.3 Ecological / Terrestrial Assessment

According the ecological report, the literature review indicates that a diverse group of birds may utilize the area because of the 2 dams present on the proposed site. More than 200 species' range of distribution falls within and around the study area. Due to the topography and habitat types present in the study area, the expected birds will vary from those commonly found in the forest *(Acacia mearnsii* plantations), grassland specific bird species and water birds. Birds seen included the Masked Weaver (*Ploceus velatus*), Blacksmith Plover (*Vanellus armatus*), Egyptian Goose (*Alopochen aegyptiacus*), African Black Duck (*Anas sparsa*), Laughing Dove (*Streptopelia senegalensis)*, Hadeda Ibis (*Bostrychia hagedash*). This development will not have a significant negative impact on the bird species of the area because of the developments and mine activities in the surrounding area. (See attached the Terrestrial Assess Report compiled by Mr SD Dlamini, January 2014).

4.1.4 Heritage assessment

The various sections in the proposed development, range from natural habitats to highly disturbed agricultural land as well as commercial blue gum plantations. The entire area is currently utilized by locals for cattle grazing and it borders an operational mine, plantations, smallholdings and a tributary of the Blesbok Spruit.

One graveyard, with approximately 70 graves, was encountered. The developer indicated in the Proposed Development Framework that this section will be used as a "Public Open Space". This is recommended, as the graveyard is quite extensive and relocation will be extremely complex and expensive. It is further recommended that the graveyard be fenced off and maintained and that the families of the deceased be allowed access to the site. **No archaeological, historical or other heritage features were observed in the rest of the study area.** (See attached the Heritage Assessment Report compiled by C van Wyk Rowe, dated January 2014).

4.1.5 Bulk Services Report:

- **Sewer:**

The proposed sewer system in the development is to be a gravity waterborne sewerage network which will service the area. There is currently existing 250mm diameter sewer bulk line which feeds to the sewerage works at Klipspruit. The sewerage effluent could connect to the existing bulk line which runs across the proposed development. However Klipspruit Sewerage works is a 10Ml/day plant and is currently operating at 15Ml/day therefore it's operating at over capacity. Therefore currently it may not be feasible to feed the effluent from the proposed development into the Klipspruit sewerage works. It is proposed that the project will have its own Waste Water Treatment Plant (WWTP).

- **Water:**

The proposed water reticulation has access to an existing 250mm diameter uPVC water pipe which is located 8km from the proposed development just below the Witbank Train Station. The existing water treatment works is a plant which is located at the Doonpoort Dam with a 42Ml Point A command reservoir and several bulk reservoirs feeding from it.

There were no Flow and pressure test were done by the Municipality on 50mm diameter water pipe in order to determine the required fire flow rate. The estimated average annual daily demand (AADD) for water will be 4 031 076l/d or 46.656l/s. The estimated average annual daily demand (AADD) for water will be 4 031 076l/d or 46.656l/s. There will be connection required from the take-off point which is located 8km from the site and a bulk main laid to supply **a 10Ml reservoir that could cater for the 48hour storage will be constructed and will serve the area.**

- **Storm Water :**

The minor storm (5 year storm) will be conveyed in an underground pipe system with side inlet catch-pits and manholes. The difference between the minor storm and major (50 year storm) will be conveyed in the road prism.

The internal reticulation will consist of 450mm diameter to 825mm diameter storm water mains. The site has an approximate area of 3 000 000 m^2 and must be retained with the required capacity of 77521m^3 of storm water and release it at a maximum rate of 60.42m^3/s. See Appendix D-5 Bulk services report.

4.2 Summary of Impact Assessment

According to the findings of the specialists, the nature of predicted impacts, their extent, duration, intensity, probability and significance are summarized in Table 1.

Table 1: Summary of Impact Assessment

ALTERNATIVE S1 (PREFERRED ALTERNATIVE)							
Phase	Nature of Impact	Extent	Duration	Intensity/ Severity	Probability/ Certainty	Significance	
						Before	After mitigation
Planning	Topography	Site	Long term	Low	Definite	Medium	Low
	Land use	Site	Long term	Low	Definite	Low	Low
	Geology	Site	Long term	Low	Probable	Low	Low
	Locality	Site	Long term	Low	Definite	Low	Low
Construction	Geology - Topography	Local	Short term	Medium	Probable	Medium	Low
	Surface & groundwater	Site	Short term	High	Definite	High	Medium
	Generation of spoil material and general waste	Site	Short term	Low	Definite	Medium	Low
	Loss of Fauna & Flora	Site	Long term	High	Definite	High	Medium
	Workforce management	Local	Short term	Low	Definite	Medium	Low
	Erosion	Local	Short term	Low	Probable	Medium	Low
	Visual impacts	Local	Short term	High	Definite	Medium	Low
	Traffic and Neighbourhood disruptions	Local	Short term	Medium	Probable	Medium	Medium
Operational	Surface & groundwater	Local/ downstream	Long term	Low	Unlikely	Low	Low
	Erosion	Site	Long term	Low	Probable	Medium	Low
	Visual impacts	Site	Long term	High	Definite	High	Medium
	Availability of services and waste management	Local	Long term	Medium	Probable	Medium	Low
	Positive Social Impacts	Local	Short term	High	Definite	High	
	Negative Social Impacts (unavailability of employment)	Local	Long term	Medium	Definite	High	

5. CONCLUSIONS AND RECOMMENDATIONS

A basic environmental impact assessment, underpinned by an extensive Public Participation Process, was conducted. As per the DEAT Guidelines (2006), all relevant Interested and/or Affected Parties (I&APs) were identified, notified and every effort made to ensure their involvement and participation in the process. Also, all relevant Authorities, notably the Local Municipality, non governmental organizations, service providers as well as key stakeholders, were notified and invited to participate in the process.

The assessment has revealed that the project will have positive and negative impacts. From the analysis given in the specialist reports and other site impact assessments, the proposed development will have the minimal impacts ecologically and socially. It is however recommended that the mitigation measures presented in the Environmental Management Program (EMP) be fully implemented. If there is vagueness in the wording and actions to be undertaken, clarifications must be sought from the environmental consultant and specialists involved in the compilation of the reports and the contact details are presented within the main report.

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Definition of Terms

"Activity" means an activity identified in Government Notice No. R. 544 and No. R. 545 of 2010 as a listed activity

"Alternatives"*,* in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to property, activity, design or technology.

"Associated Infrastructure" means any building or infrastructure that is necessary for the functioning of a facility or activity or that is used for an ancillary service or use from the facility.

"Cumulative impact"*,* 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.

"Environmental impact assessment'*,* means the process of collecting, organizing, analyzing, interpreting and communicating information that is relevant to the consideration of that application.

"Environmental management programme" means a detailed plan of action prepared to ensure that recommendations for enhancing positive environmental impacts and/or limiting or preventing negative environmental impacts are implemented during the life-cycle of a project.

"Interested and Affected Party" means any person, group of persons or organization interested in or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity;

"Public Participation Process" means a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters;

"Significant impact" means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment;

"The Act" means the National Environmental Management Act, 1998 (Act No.107 of 1998).

Abbreviations

AADD	Average annual daily demand
BAR	Basic Assessment Report
BID	Background Information Document
DEAT	Department of Environment, Agriculture and Tourism
DEDET	Department of Economic Development, Environment and Tourism
DAFF	Department of Agriculture, Forestry and Fishery
DWA	Department of Water Affairs
DWA&E	Department of Water Affairs and Environment
EA	Environmental Authorization
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Program
I&APs	Interested and Affected Parties
MAP	Mean Annual Precipitation
masl	Meters Above See Level
MBCP	Mpumalanga Biodiversity Conservation Plan.
MDEDET	Mpumalanga Department of Economic Development, Environment and Tourism
Ml	Mega Litres
MTPA	Mpumalanga Tourism and Parks Agency
NEMA	National Environmental Management Act, Act No 107 of 1998
NEM:WA	National Environmental Management: Waste Act, Act No 59 of 2008.
SABS	South African Bureau of Standards
RoD	Record of Decision
WES	Wandima Environmental Services

ASSUMPTIONS & LIMITATIONS

For the purpose of this report it has been assumed that all information received from the client and specialists are correct.