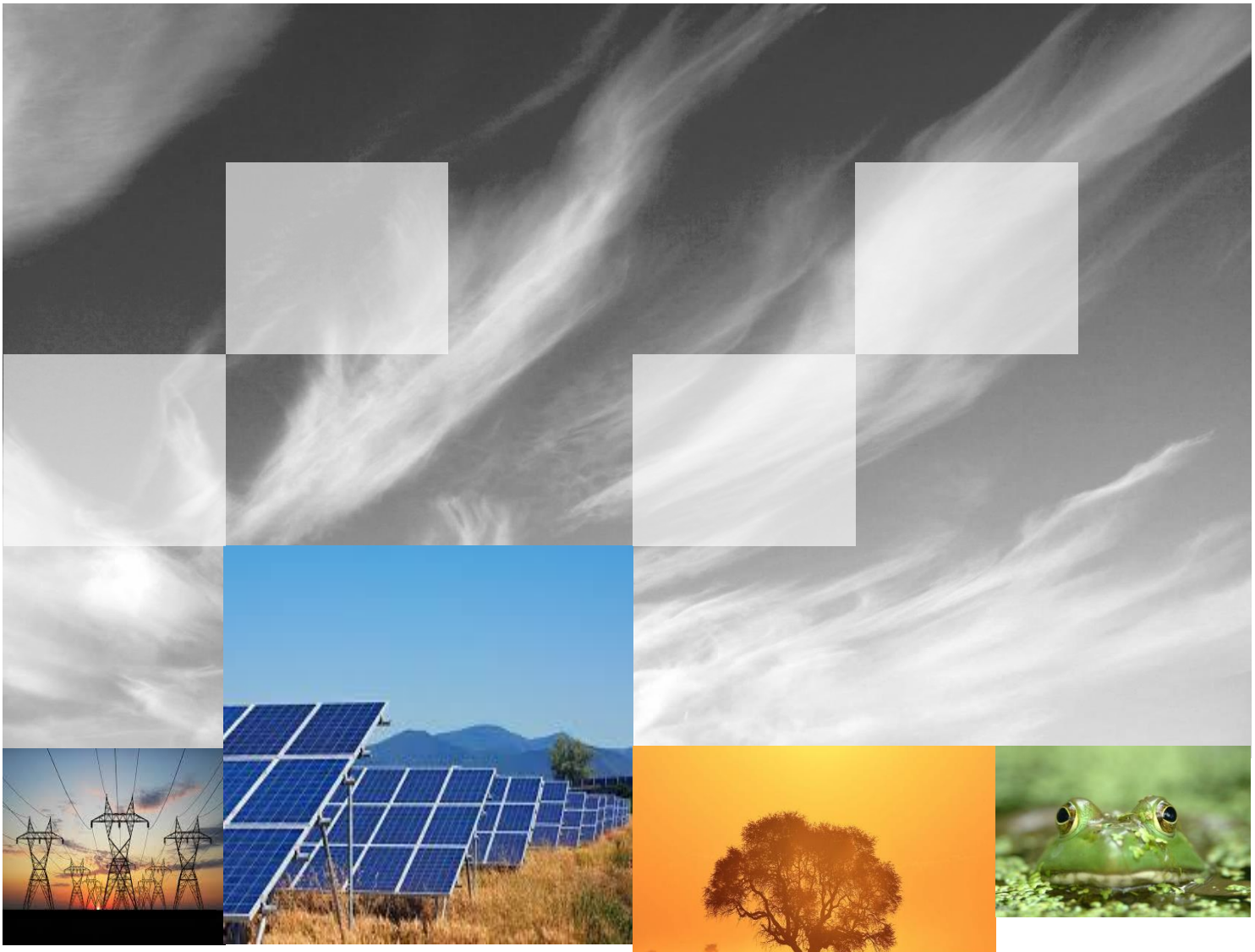

DRAF ENVIRONMENTAL IMPACT REPORT (DEIR)

13 March 2017

PROPOSED TOWNSHIP DEVELOPMENT ON A PORTION OF PORTION 48 OF THE FARM VALSCHFONTIN NO. 33, REGISTRATION DIVISION JS, MPUMALANGA PROVINCE

ENVIRONAMICS

PROJECT DETAIL

Project Title	:	The proposed Township Development on a Portion of Portion 48 of the farm Valschfontein No. 33, Registration Division J.S., Mpumalanga Province
DARLEA Ref	:	1/3/1/16/1N-75
Authors	:	Mrs. Marelie Botha Mrs. Carli Otte Ms. Liesl De Swardt
Client	:	Mpumalanga Provincial Department of Cooperative Governance and Traditional Affairs on behalf of the Dr. JS Moroka Local Municipality
Report Status	:	Draft EIR
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When used as a reference this report should be cited as: Environamics (2017) Draft EIR: The proposed Township Development on a Portion of Portion 48 of the farm Valschfontein No. 33, Registration Division J.S., Mpumalanga Province

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GLOSSARY OF TERMS AND ACRONYMS

BA	Basic Assessment
BAR	Basic Assessment Report
DARLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
DWS	Department of Water and Sanitation
DRJSMLM	Dr. JS Moroka Local Municipality
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
DEIR	Draft Environmental Impact Report
EMPr	Environmental Management Programme
Environmental impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's environmental aspects.
GNR	Government Notice Regulation
I&AP	Interested and affected party
IDP	Integrated Development Plan
ML	Mega Litres
Mitigate	Activities designed to compensate for unavoidable environmental damage.
NEMA	National Environmental Management Act No. 107 of 1998
NWA	National Water Act No. 36 of 1998
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework
WWTW	Waste Water Treatment Works

EXECUTIVE SUMMARY

The Dr. JS Moroka Local Municipality (DRJSMLM) is situated in the northern part of the Nkangala District Municipality which is situated in the north-western part of the Mpumalanga Province, with Siyabuswa as the capital town. It forms part of the larger economic region of the City of Tshwane, City of Johannesburg, Emalahleni and Steve Tshwete (previously Middelburg) Municipalities, since these areas provide employment opportunities to a sizable number of the municipality's population. The geographical area includes 55 villages. It is characterised by a variety of urban, peri-urban and rural areas. Land use is largely for residential purposes, with some pieces of land falling under the control of traditional leadership. The municipal area comprises a total area of 1 416 km² and is home to a total population of ±249 705 people which amounts to ~62 162 households. According to the DRJSMLM Integrated Development Plan (IDP) households are growing at 1.35% per annum, with a large percentage of household still without municipal tap water and flush toilets (DRJSMLM IDP, 2015:28). The DRJSMLM is driven by the municipal vision that resonates around three key element, better life, quality and sustainable services and institutional efficiencies. The attainment of the three pillars is vital to instill focus and direction in the organization. The vision of a better life for all citizens and residents at the DRJSMLM calls for a conscious movement towards operational efficiencies and effectiveness in an environment that identifies key economic growth points and associated strategies.

In response to the above the Mpumalanga Provincial Department of Cooperative Governance and Traditional Affairs on behalf of the Dr. JS Moroka Local Municipality intends to establish a township that would accommodate a mix use development with approximately 500 erven on 35 hectares. The site is located east of Ouvalsfontein, west of Siyabuswa-la townships and adjacent to the R568 Regional Road within the Dr JS Moroka Local Municipality (refer to Figure 1 for the locality map). The site was identified as being highly desirable due to its location within the urban edge (i.e. service provision), environmental conditions (i.e. geology, agricultural potential, ecological and archaeology sensitivity), as well as site access (i.e. to access to municipal services and road infrastructure).

The Environmental Impact Assessment (EIA) Regulations, 2014 (Regulation 982) determine that an environmental authorisation is required for certain listed activities, which might have detrimental effects on the environment. The following activities have been identified with special reference to the proposed development and are listed in the EIA Regulations:

- Activity 28(i) (GNR. 983): *"Residential, mixed… developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares."*
- Activity 15 (GNR. 984): "*The clearance of an area of 20 hectares or more of indigenous vegetation*."

Being listed under Listing Notice 1 & 2 (Regulation 983 & 984) implies that the development is considered as potentially having a significant impact on the environment. Subsequently a

'thorough assessment process' is required as described in Regulations 21-24. Environamics has been appointed as the independent consultant to undertake the EIA on Dr JS Moroka Local Municipality's behalf.

Appendix 3 to GNR982 requires that the EIA process be undertaken in line with the approved plan of study for EIA and that the environmental impacts, mitigation as well as the residual risks of the proposed activity be set out in the environmental impact assessment report (EIR). The potential positive and negative impacts associated with the proposed development have been assessed and the potentially most significant environmental impacts associated with the development are briefly summarised below:

Impacts during the construction phase:

During the construction phase, minor negative impacts are foreseen over the short term. The latter refers to a period of months. The potentially most significant impacts relate to the impacts of the geology on the proposed development, impacts on the existing service infrastructure, socio-economic impacts such as the provision of temporary employment and other economic benefits.

Impacts during the operational phase:

During the operational phase the study area will serve as a residential extension of Siyabuswa. The potential impacts during this phase of the development will be permanent in nature. The negative impacts are generally relating to impacts associated with the existing service infrastructure, and potential health and safety impacts (failure of services infrastructure). The operational phase will have a direct positive impact through the provision of employment opportunities for its duration, and the provision of quality housing.

Cumulative impacts:

Cumulative impacts could arise if other similar projects are constructed in the area. According to the SDF (2014) the following areas are earmarked as Spatial Development Framework Expansion Areas within the larger Spatial Development Area:

- Kameeldrift A (Area earmarked for future development);
- Waterval B (Area earmarked for future development); and
- Mapoch/Weltevreden (Area earmarked for future development).

The potential for cumulative impacts may therefore exist. However, due to the nature of the proposed development as well as its location within the urban edge, the significance of any potential cumulative impacts is deemed to be very low. The potentially most significant cumulative impact will relate to the provision of basic services. The EIA Report will include a

detailed assessment of the potential cumulative impacts associated with the proposed development.

Regulation 23 of the EIA Regulations determine that an EIA report be prepared and submitted for the proposed activity after the competent authority approves the final scoping report. The EIA report will evaluate and rate each identified impact, and identify mitigation measures that may be required. The EIA report will contain information that is necessary for the competent authority to consider the application and to reach a decision contemplated in Regulation Appendix 3 of the EIA Regulations.

1 INTRODUCTION

This section aims to introduce the Environmental Impact Report (EIR) and specifically to address the following requirements of the regulations:

Appendix 3. (3) An environmental impact assessment report contains 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:

(i) the EAP who prepared the report; and

(ii) the expertise of the EAP, including a curriculum vitae.

1.1 LEGAL MANDATE AND PURPOSE OF THE REPORT

Regulations No. 982, 983, 984 and 985 (of 4 December 2014) promulgated in terms of Section 24(5) and 44 of the National Environmental Management Act, (107 of 1998) determine that an EIA process should be followed for certain listed activities, which might have a detrimental impact on the environment. According to Regulation No. 982 the purpose of the Regulations is: *"…to regulate the procedure and criteria as contemplated in Chapter 5 of the Act relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto*".

The EIA Regulations No. 983, 984 and 985 outline the activities for which EIA should apply. The following activity with special reference to the proposed activity is listed in the EIA Regulations:

Table 1.1: Listed activities

Relevant notice:	**Activity No (s)**	**Description of the listed activity as per project description**:
GNR. 983, 4 Dec. 2014	Activity 28(i)	• *"Residential, mixed… developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares."* • Activity 28(i) is triggered since the proposed activity is located on land zoned for Agricultural use and the

		site is larger than 5 hectares in extent (~35 hectares).
GNR. 984, 4 Dec. 2014	Activity 15	• *"The clearance of an area of 20 hectares or more of indigenous vegetation*." • Activity 15 is triggered since the proposed activity will result in the clearance of more than 20 hectares of indigenous vegetation. Certain portions of the site have not been lawfully disturbed during the preceding ten years.

Being listed under Listing Notice 1 and 2 (Regulation 983 & 984) implies that the proposed activity is considered as potentially having a significant impact on the environment. Subsequently a 'thorough assessment process' is required as described in Regulations 21-24. According to Appendix 3 of Regulation 982 the objective of the EIR is to, through a consultative process:

- Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
- Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
- Determine the—
    - nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
    - degree to which these impacts-
        - can be reversed;
        - may cause irreplaceable loss of resources, and
        - can be avoided, managed or mitigated;
- identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment; identify,

assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;

- identify suitable measures to avoid, manage or mitigate identified impacts; and
- identify residual risks that need to be managed and monitored.

This report is the Draft Environmental Impact Report (EIR) to be submitted to the Mpumalanga Department Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA). According to Regulation 982 all registered I&APs and relevant State Departments must be allowed the opportunity to review all draft reports. The Draft EIR will be made available to I&APs and all relevant State Departments. They will be requested to provide written comments on the report within 30 days of receiving it. All issues identified during the review period will be documented and compiled into a Comments and Response Report to be included as part of the Final EIR.

1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Environamics was appointed by the applicant as the independent EAP to conduct the EIA and prepare all required reports. All correspondence to the EAP can be directed to:

Contact person:	Marélie Botha		
Postal Address:	PO Box 6484, Baillie Park, 2526		
Telephone:	018-290 8228 (w)	086 762 8336 (f)	081 477 9545 (Cell)
Electronic Mail:	marelie@environamics.co.za		

Regulation 13(1)(a) and (b) determines that an independent and suitably qualified and experienced EAP should conduct the EIA. In terms of the independent status of the EAP a declaration is attached as Appendix A to this report. The expertise of the EAP responsible for conducting the EIA is also summarized in a curriculum vitae included as part of Appendix A.

1.3 DETAILS OF THE SPECIALISTS

Table 1.2 provides information on the specialists that have been appointed as part of the EIA process. Regulation 13(1)(a) and (b) determines that an independent and suitably qualified, experienced and independent specialist should conduct the specialist study, in the event where the specialist is not independent, a specialist should be appointed to externally review the work of the specialist as contemplated in sub regulation (2), must comply with sub regulation 1. In terms of the independent status of the specialists, their declarations are attached as Appendix H to this report. The expertise of the specialists is also summarized in their respective reports.

Table 1.2: Details of specialists

Specialist Study	Prepared by	Contact Person	Postal Address	Tel	e-mail
Heritage Impact Assessment	J van Schalkwyk Heritage Consultant	Mr. Johnny van Schalkwyk	62 Coetzer Avenue, Monument Park 0181	Cell: 076 790 6777	jvschalkwyk@mweb.co.za
Civil Services Report	SCIP Engineering Group (Pty) Ltd.	Mr. F. F. Deysel	Private Bag X7297, Suite 145 eMalaheni, 1035	Tel: (013) 656 2660 Fax: (013) 656 3325	witbank@scip.co.za
Phase 1 Geological Investigation	GEOSET CC	Mr. David S. van der Merwe	P. O. Box 60995 Karenpark, 0118	Cell: 082 925 4075	davidsvdm@webmail.co.za
Traffic Impact Assessment	Gary Edwards Traffic Engineering	Mr. Gary Edwards	57 Diamond Drive Pebble Rock Golf Village Kameelfontein 0035	Cell: 082 415 3646	gary@gete.co.za

1.4 STATUS OF THE EIA PROCESS

The EIA process is conducted strictly in accordance with the stipulations set out in Regulations 21-24 of Regulation No. 982. Table 1.2 provides a summary of the EIA process and future steps to be taken. It can be confirmed that to date:

- A site visit was conducted on 2 November 2016 to discuss the proposed development and assess the site.
- A fully completed application form and Draft Scoping Report was submitted to the Mpumalanga Department Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) on 18 November 2016.
- The Draft Scoping Report was made available to all registered I&APs and relevant State Departments on 18 November 2016 and all I&APs were requested to submit their comments on the report within 30 days of the notification (9 January 2017).
- The Mpumalanga Department Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA) accepted the Application Form and acknowledged receipt of the Draft Scoping Report on 1 December 2016.
- The Final Scoping Report (FSR) was submitted to the Mpumalanga DARDLEA on 19 January 2017.
- The Mpumalanga DARDLEA accepted the final scoping report on 27 January 2017.
- The Draft EIR was submitted to DARDLEA on 13 March 2017.

It is envisaged that the EIA process should be completed within approximately five months of submitting the Final EIR, i.e. by August 2017 – see Table 1.3.

Table 1.3: Project schedule

Activity	**Prescribed timeframe**	**Timeframe**
Conduct site visit		2 Nov 2016
Submit application form & draft scoping report	-	18 Nov 2016
Commenting period on draft scoping report	30 Days	18 Nov 2016 – 9 Jan 2017
Submission of final scoping report	44 Days	19 Jan 2017

Accept scoping report	43 Days	27 Jan 2017
Commenting period on draft EIR & EMPr	30 Days	March – April 2017
Submission of final EIR & EMPr	106 Days	April 2017
Decision	107 Days	July/Aug 2017
Registered I&APs notified of decision	12 Days	Aug 2017

1.5 STRUCTURE OF THE REPORT

This report is structured in accordance with the prescribed contents stipulated in Appendix 3 of Regulation No.982. It consists of seven sections demonstrating compliance to the specifications of the regulations as illustrated in Table 1.4.

Table 1.4: Structure of the report

Requirements for the contents of an EIR as specified in the Regulations		**Section in report**	**Pages**
Appendix 3. (3) - An environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include-			
(a)	details of -	1	11-19
	(i) the EAP who prepared the report; and		
	ii) the expertise of the EAP, including a curriculum vitae.		
(b)	the location of the activity, including-	2	20-25
	(i) the 21-digit Surveyor General code of each cadastral land parcel;		
	(ii) where available, the physical address and farm name;		
	(iii) where the required information in items (i) and (ii) is not available, 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-		
	(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or		
	(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;		
(d)	a description of the scope of the proposed activity, including-		
	(i) all listed and specified activities triggered and being applied for;		

	and		
	(ii) a description of the 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.	3	26-36
(f)	a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	4	37-38
(g)	A motivation for the preferred development footprint within the approved site.	5	39-49
(h)	a full description of the process followed to reach the proposed development footprint within the approved site, including –		
	(i) details of all the development footprint alternatives considered;		
	(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;		
	(iii) 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.		
	(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;		
	(ix) if no alternative development locations for the activity were investigated, the motivation for not considering such; and		
	(x) a concluding statement indicating the preferred alternative development location within the approved site.		
	(v) the impacts and risks identified 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;	6	50-71
	(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;		
	(vii) 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;		
	(viii) the possible mitigation measures that could be applied and level of residual risk;		

(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 location through the life of the activity, including-		
	(i) a description of all environmental issues and risks that were identified during the EIA process; and		
	(ii) 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-		
	(i) cumulative impacts;		
	(ii) the nature, significance and consequences of the impact and risk;		
	(iii) the extent and duration of the impact and risk;		
	(iv) the probability of the impact and risk occurring;		
	(v) the degree to which the impact and risk can be reversed;		
	(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and		
	(vii) 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-	7	74-76
	(i) a summary of the key findings of the environmental impact assessment:		
	(ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and		
	(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;		
(m)	based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the 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;	Not applicable	

(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	Not applicable	
(p)	a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	7	74-76
(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;	Not applicable	
(s)	an undertaking under oath or affirmation by the EAP in relation to-	Appendix A to the report	
	(i) the correctness of the information provided in the report;		
	(ii) the inclusion of comments and inputs from stakeholders and interested and affected parties (I&APs);		
	(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and		
	(iv) any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by I&APs;		
(t)	where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	Not applicable	
(u)	an indication of any deviation from the approved scoping report, including the plan of study, including-	Not applicable	
	(i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and		
	(ii) a motivation for the deviation;		
(v)	any specific information that may be required by the CA; and	Not applicable	
(w)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	Not applicable	

2 ACTIVITY DESCRIPTION

This section aims to address the following requirements of the regulations:

Appendix 3. (3) An EIR (...) must include-

(b) the location of the activity, including-

(i) the 21-digit Surveyor General code of each cadastral land parcel;

(ii) where available, the physical address and farm name;

(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;

(c) a plan which locates the proposed activity applied for at an appropriate scale, or, if it is-

(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or

(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;

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

(i) all listed and specified activities triggered and being applied for;

(ii) a description of the associated structures and infrastructure related to the development.

2.1 BACKGROUND TO THE DEVELOPMENT

According to the DRJSMLM IDP (2015/16) the Municipality is experiencing an increase in its population as it is witnessed by the rapid growth of mostly informal expansion of it settlements. This has resulted in a huge demand for inter alia housing delivery and related services for basic infrastructure provision. Although the National Department of Human Settlements through Mpumalanga Provincial counterpart has been supporting the Municipality in the delivery of houses to the poor, indigent and destitute households, the backlog remains very high.

The location of the specific development to the south of Siyabuswa has long since been identified as the next phase in the future development of the town of Siyabuswa (refer to Figure 3 for the SDF of Dr JS Moroka Local Municipality). The need for the development is directly linked to the Municipality's aim to address the housing backlog and to avoid unofficial and informal housing developments through pro-active provision of sufficient number of formal erven.

From an environmental perspective, the main conclusions emanating from the SDF are the following:

- The location has been earmarked through the IDP process for the next development of Siyabuswa.
- The proposed development is located within the designated urban edge which suggests that it is in line with the principle to counter urban sprawl and creating compact quality urban spaces serving dense residential areas.

2.2 THE LOCATION OF THE ACTIVITY AND PROPERTY DESCRIPTION

The activity entails the establishment of a township with mix development on a Portion of Portion 48 of the farm Valschfontein, Registration Division JS, Mpumalanga Province situated within the Dr JS Moroka Local Municipality area of jurisdiction (refer to Figure 2 for the regional map). The town of Marbalhall is located approximately 29 km north east of the proposed development. The site is located east of Ouvalsfontein, west of Siyabuswa-la townships and adjacent to the R568 Regional Road (refer to Figure 1 for the locality map). Table 2.1 below provides a summary of the general site information.

Table 2.1: General site information

Description of affected farm portion	A Portion of Portion 48 of the farm Valschfontein No 33, Registration Division JS, Mpumalanga Province
21 Digit Surveyor General codes	T0JS00000000003300048
Coordinates (Middle point of the site)	25˚08' 25.01"S; 29˚03' 56.10"E
Title Deed	T10438/90
Zoning	The site is zoned for "Agricultural" land uses but has not been used for this purpose in the preceding 10 years.
Photographs of the site	Refer to the Plates
Surface area to be covered	Approximately 35 hectares
Number of erven to be developed	Approximately 500
Activity triggered	• GNR983, Activity 15: *"The clearance of an area of 20 hectares or more of indigenous vegetation*." • GNR 983, Activity 28(i): *"Residential, mixed… developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (i) will occur*

	inside an urban area, where the total land to be developed is bigger than 5 hectares."

The site is bordered by residential development to the west (Ouvalsfontein), the east the Siyabuswa-la Industrial Development and to the south the R568 Regional Road. The site survey revealed that the site currently consists of abandoned agricultural fields. The vegetation at the site appears to be disturbed and edge effects of the surrounding land uses and residential areas are conspicuous (tracks, informal dumping, paint on rocks, burnt sites, informal sleeping sites) – – refer to plates 1-20 for photographs of the development area. The property on which the township is to be established is owned by Traditional Leaders.

2.3 ACTIVITY AND LAYOUT DESCRIPTION

The activity entails the establishment of approximately 500 mix development erven with associated land uses. It comprises an area of approximately 35 hectares. The layout plan will follow the limitations of the site and aspects such as environmentally sensitive areas, roads, and servitudes will be considered. The total surface area proposed for layout options include the residential erven and associated land uses and infrastructure such as roads and services infrastructure – refer to figure 6 for proposed layout and table 2.2 for the corner coordinate points.

Figure 6: Proposed layout on a Portion of Portion 48 of the farm Valschfontein No. 33

Table 2.2 indicates the corner coordinate points for the proposed development site.

Table 2.2: Coordinates for the site

Coordinates			
EIA Footprint	1	25°08’40.17"S	29° 03'55.13"E
	2	25°08'37.82"S	29° 03'42.42"E
	3	25°08'14.50"S	29° 03'51.66"E
	4	25°08'17.43"S	29° 04'07.87"E
	5	25°08'34.04"S	29° 04'04.26"E
	6	25°08'32.96"S	29° 03'57.24"E
	7	25°08'31.60"S	29° 03'52.77"E
	8	25°08'34.40"S	29° 03'52.27"E
	9	25°08'35.07"S	29° 03'56.22"E

The land uses that are being applied for are listed in table 2.3 below. The area will cover a total of 44.41Ha, this includes the existing roads and industrial development.

Table 2.3: Land use right that are being applied for

Land Use	Number	Erf No.	Area (Ha)	%
Low Density Residential	499	1-499	21.37	48.12
High Density Residential	3	500-502	4.88	10.99
Institutional	3	503-505	0.65	1.46
Mixed Use	5	506-510	0.96	2.16
Industrial	8	511-518	6.17	13.89
Open Space	14	519-532	0.48	1.09
Transportation Services			9.90	22.29
Total	**507**		**44.41**	**100**

Due to the nature of the site, consisting of abandoned agricultural fields, there are very limited environmental features to be accommodated apart from some natural vegetation and the non-perennial stream located approximately 200 meters to the west of the site (refer to the plates). The distance of 200 m away from the proposed development is deemed to be sufficient.

The proposed development will trigger the following listed activities:

- Activity 28(i) of GNR. 985: *"Residential, mixed… developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares."*
- Activity 15 of GNR. 984: "*The clearance of an area of 20 hectares or more of indigenous vegetation*."

The potentially most significant impacts will occur during the construction phase of the development, which will include the following activities:

- Site clearing and preparation

  Certain areas of the site will need to be cleared of vegetation and some areas may need to be levelled.

- Civil works

  The main civil works are:

  - Terrain levelling if necessary– Levelling will be minimised by locating the residential erven on the flatter areas of the site.
  - Housing foundation- The exact method will depend on the detailed geotechnical analysis.
  - Construction of access and internal roads and pedestrian paths – existing paths will be used were reasonably possible.
  - Services – the majority of service infrastructure will be buried underground.

2.4 SERVICES PROVISION

The services requirements for the development as indicated by the Civil Services Report and confirmed by the J. S. Moroka Local Municipality are summarised below:

- Water: The development will tie in with the existing Siyabuswa reservoir which services the existing Industrial stands to the south of the proposed development. The reservoir is served with water from the Weltevreden Water Purification works and has a capacity of 64 Mega Litres (ML). The development will utilise approximately 1.003 ML/day.
- Sanitation: Dr. JS Moroka indicated that the existing Waste Water Treatment Works (WWTW) situated to the north of the proposed development has a capacity of 10ML/day and is currently operating at between 8 and 9 ML/day. The WWTW therefore has capacity to provide services the proposed development. The existing stands at Siyawuswa Industrial are already being serviced by the WWTW and the total demand takes the existing stands into account.
- Electricity: The development will link onto the existing municipal electricity supply network.

- Waste removal: The construction waste will be removed to licensed landfill sites accepting such kinds of wastes. During the operational phase household waste, will be absorbed by the municipal waste stream. In a letter dated 13 February 2017 and 9 March 2017, the Dr. J.S Moroka Local Municipality was asked to confirm the capacity of the nearest landfill site, to date no feedback was received.

3 LEGISLATIVE AND POLICY CONTEXT

This section aims to address the following requirements of the regulations:

Appendix 3. (3) An EIR (...) must include-

(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.

3.1 INTRODUCTION

Environmental decision making with regards to township establishments is based on numerous policy and legislative documents. These documents inform decisions on project level environmental authorisations issued by the Mpumalanga Department Agriculture, Rural Development, Land and Environmental Affairs (DARLEA) as well as comments from local and district authorities. Moreover, it is significant to note that they also inform strategic decision making reflected in IDPs and SDFs. Therefore, to ensure streamlining of environmental authorisations it is imperative for the proposed activity to align with the principles and objectives of key national, provincial and local development policies and legislation. The following acts and policies are briefly summarised:

- The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)
- National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA]
- National Water Act, 1998 (Act No. 36 of 1998)
- National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
- National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
- The National Heritage Resources Act, 1999 (Act No. 25 of 1999)
- Mpumalanga Province Growth and Development Strategy, 2004-2014
- Nkangala District Municipality Integrated Development Plan (IDP), 2016-2021
- Dr. JS Moroka Integrated Development Plan (IDP), 2014/15 Review
- Dr. JS Moroka Spatial Development Framework (SDF), 2014

The key principles and objectives of each of the legislative and policy documents are briefly summarised in Tables 3.1 and 3.2 to provide a reference framework for the implications for the proposed activity.

3.2 LEGISLATIVE CONTEXT

Table 3.1: Legislative context for the establishment of a township

LEGISLATION	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
The Constitution of South Africa (Act No. 108 of 1996)	National Government	1996	The Constitution is the supreme law of the Republic and all law and conduct must be consistent with the Constitution. The Chapter on the Bill of Rights contains several provisions, which are relevant to securing the protection of the environment. Section 24 states that "*everyone has the right to (a) an environment that is not harmful to their health or well-being and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that – (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development*." The Constitution therefore, compels government to give effect to the people's environmental right and places government under a legal duty to act as a responsible custodian of the countries environment. It compels government to pass legislation and use other measures to protect the environment, to prevent pollution and ecological degradation, promote conservation and secure sustainable development.
The National Environmental Management Act (Act No. 107 of 1998)	National and Provincial Department of Environmental Affairs	1998	NEMA provides for co-operative governance by establishing principles and procedures for decision-makers on matters affecting the environment. An important function of the Act is to serve as an enabling Act for the promulgation of legislation to effectively address integrated environmental management. Some of the principles in the Act are accountability; affordability; cradle to grave management; equity; integration; open information; polluter pays; subsidiary; waste avoidance and minimisation; co-operative governance; sustainable development; and environmental protection and justice. The mandate for EIA lies with the National Environmental Management Act (107 of 1998) and the EIA

LEGISLATION	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
			Regulations No. 982, 983, 984 and 985 promulgated in terms of Section 24(5) and 44 of NEMA. The EIA Regulations determine that an Environmental Authorisation is required for certain listed activities, which might have a detrimental effect on the environment. This EIA was triggered by activity 28(i) and 15 listed in Regulation R983 & R984, which requires a 'scoping and environmental impact assessment process.'
The National Water Act (Act No. 36 of 1998)	Department of Water Affairs (DWA)	1998	Sustainability and equity are identified as central guiding principles in the protection, use, development, conservation, management and control of water resources. The intention of the Act is to promote the equitable access to water and the sustainable use of water, redress past racial and gender discrimination, and facilitate economic and social development. The Act provides the rights of access to basic water supply and sanitation, and environmentally, it provides for the protection of aquatic and associated ecosystems, the reduction and prevention of pollution and degradation of water resources. As this Act is founded on the principle that National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest, a person can only be entitled to use water if the use is permissible under the Act. Chapter 4 of the Act lays the basis for regulating water use. A Water Use License will not be required for the proposed development, since water will be obtained from the local municipality.
National Environmental Management: Waste Act	Department of Environmental Affairs (DEA)	2008	NEMWA has been developed as part of the law reform process enacted through the White Paper on Integrated Pollution and Waste Management and the National Waste Management Strategy (NWMS). The objectives of the Act relate to the provision of measures to protect health, well-being and the environment, to ensure that people are aware of the impact of waste on their health, well-being and the environment, to provide for compliance with the measures, and to give effect to section 24 of the

LEGISLATION	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
(Act No. 59 of 2008)			Constitution in order to secure an environment that is not harmful to health and well-being. Regulations No. R921 (of 29 November 2013) promulgated in terms of Section 19(2) of the National Environmental Management: Waste Act (59 of 2008) determine that no person may commence, undertake or conduct a waste management activity listed in this schedule unless a license is issued in respect of that activity. A waste permit will not be required for the proposed development.
National Environment Management: Air Quality Act (Act No. 39 of 2004)	Department of Environmental Affairs (DEA)	2004	The object of this Act is to protect the environment by providing reasonable measures for the protection and enhancement of the quality of air in the Republic; the prevention of air pollution and ecological degradation; and securing ecologically sustainable development while promoting justifiable economic and social development. Regulations No. R893 (of 22 November 2013) promulgated in terms of Section 21(1)(b) of the National Environmental Management Act: Air Quality Act (39 of 2004) determine that an Atmospheric Emission License (AEL) is required for certain listed activities, which result in atmospheric emissions which have or may have a detrimental effect on the environment. The Regulation also sets out the minimum emission standards for the listed activities. An Atmospheric Emission License will not be required for the proposed development.
The National Heritage Resources Act (Act No. 25 of 1999)	South African Heritage Resources Agency (SAHRA)	1999	The Act aims to introduce an integrated and interactive system for the management of the heritage resources, to promote good government at all levels, and empower civil society to nurture and conserve heritage resources so that they may be bequeathed to future generations and to lay down principles for governing heritage resources management throughout the Republic. It also aims to establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources, to set norms and maintain essential national

LEGISLATION	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
			standards and to protect heritage resources, to provide for the protection and management of conservation-worthy places and areas by local authorities, and to provide for matters connected therewith. The Act protects and manages certain categories of heritage resources in South Africa. For the purposes of the Heritage Resources Act, a "heritage resource" includes any place or object of cultural significance. In this regard the Act makes provision for a person undertaking an activity listed in Section 28 of the Act to notify the resources authority. The resources authority may request that a heritage impact assessment be conducted if there is reason to believe that heritage resources will be affected. A case file has been opened on SAHRIS and all relevant documents will be submitted for their comments and approval.

3.3 POLICY CONTEXT

Table 3.2: Policy context for the establishment of a township

POLICY	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
Mpumalanga Province Growth and Development Strategy	Mpumalanga Provincial Government	2004 - 2014	The Strategy (PGDS) provides a framework for integrated and sustainable growth and economic development for the province and its people over the next ten years. It addresses the formulation of a common vision, goals and objectives of what should be achieved and how the provincial government and its social partners should achieve its objectives. The PGDS notes that the Province occupies 6.5% of the surface area of South Africa. It is characterised by spectacular natural beauty, a wealth of natural resources and is one of the fastest growing Provinces in the Country. Mpumalanga finds itself in this labour force trap because 85,8% of its labour force consists of Africans, who either had no formal schooling or only limited primary or secondary schooling. The Province experienced an average annual growth of 4,6% in its labour force between 1996 and 2002. This relatively high increase in the labour force resulted from normal population growth, the expectations of people to find some form of employment in the new South Africa, and a renewed entry of females and youths into the labour market of the Province. There has been a very low growth per annum in formal employment opportunities, 1,2% per annum versus 4,6% growth per annum in the labour force. Only 48,1% of the labour force was formally employed in 2002, which is significantly lower than the 57,7% in 1996. The PGDS has thus been developed with a focus on the following six key development priority areas: • Economic Development • Development Infrastructure

POLICY	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
			• Social Development • Sustainable Environmental Development • Good Governance • Human Resource Development.
Nkangala District Municipality Integrated Development Plan (IDP)	Nkangala District Municipality	2016 - 2021	The IDP serves as the basic developmental framework and the basis for annual reviews of municipal performance for the period 2016-2021. The IDP is explicitly aligned with the requirements of the Municipal Systems Act (2000) and the developmental objectives outlined in the National Priority Outcomes, amongst others. The IDP identifies a number of strategic goals and objectives, which were broken down into the following core strategic objectives: • Financial viability and management; • Infrastructure development and service delivery; • Good governance and public participation; • Institutional development and transformation; and • District economic development. If the number of households is growing at a faster rate than that of the population it means that the average household size is decreasing, and vice versa. In 2013, the Nkangala District Municipality comprised of 396 000 households. This equates to an average annual growth rate of 3.35% in the number of households from 2003 to 2013. With an average annual growth rate of 2.20% in the total population, the average household size in the Nkangala District Municipality is by implication decreasing. This is confirmed by the data where the average household size in 2003 decreased from

POLICY	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
			approximately 3.9 individuals per household to 3.5 persons per household in 2014 (IDP, 2016/21).
Dr JS Moroka Integrated Development Plan (IDP) Review	Dr. JS Moroka Local Municipality	2014/ 2015	The Municipality is experiencing an increase in its population as it is witnessed by the rapid growth of mostly informal expansion of it settlements. This has resulted in a huge demand for inter alia housing delivery and related services for basic infrastructure provision. Although the National Department of Human Settlements through Mpumalanga Provincial counterpart has been supporting the Municipality in the delivery of houses to the poor, indigent and destitute households, the backlog remains very high. Concentrate on future sustainable development approaches in terms of sustainable development spending. The Mpumalanga Government supports the delivery of housing through the Provincial Growth and Development Strategy and has established a fully-fledged and dedicated department of human settlement in order to meet housing delivery targets. The following housing delivery targets are identified: • There is a need to acquire suitable, well-located land for low-cost housing. • Land tenure upgrading still poses a serious problem because it leaves the municipality with no land for housing. • Delays in the transfer of pieces of land by the state departments. • Provision of basic services on pieces of land earmarked or identified through the Spatial Development Framework for residential use is still a challenge due to lack of funds. • Personnel shortages in the unit is still a challenge that delays progress in the accreditation processes. • Lack of communication at all three tiers of government.

POLICY	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
			<u>The following priorities are identified:</u> • Developing a comprehensive approach towards sustainable human settlements. • Promoting innovative partnerships such as co-ops within rural communities. • Building on community involvement. • Developing and promoting the use of locally produced building materials as a means of reducing housing construction cost for CRO's. • To achieve Outcome number 8 as outlined by the National department of housing for provision of sustainable human settlement. • Implementation of the National Housing Programmes which entails Financial Interventions, Incremental Housing, Social and Rental Housing and Rural Housing Programmes. • Contribute towards the target of eradicating informal settlements by 2030. **<u>The following activities are identified:</u>** • The allocations are to be distributed according to the compiled needs register. • To make sure that the municipality get accreditation in terms housing unit. • To make sure that newly established human settlements are provided with sustainable basic services.
Dr JS Moroka spatial Development Framework	Dr JS Moroka Local Municipality	2014	The Dr JS Moroka Spatial Development Framework can be described as an indicative plan showing the desired patterns of land use, direction of growth, special development areas and conservation-worthy areas. The SDF needs to be informed by the vision of the municipal area, the development objectives, as well as the strategies and outputs identified by the IDP. The SDF provides spatial guidance in the form of maps and spatial development plans. The Dr JS Moroka SDF (IDP, 2014) reveals the following

POLICY	ADMINISTERING AUTHORITY	DATE	SUMMARY / IMPLICATIONS FOR PROPOSED DEVELOPMENT
(SDF)			spatial development principles for the municipality: • Containing urban sprawl by providing development guidelines for the creation of compact quality urban spaces serving dense residential areas.

4.1 OTHER LEGISLATION

Other legislation mainly refers to the following:

- Planning legislation governing the rezoning process and approval of the layout plan.
- Design standards and legislation for services provision such as water, sewerage, electricity, etc.
- Municipal bylaws related to building plans, building regulations, etc.

4.2 RELEVANT GUIDANCE

The following guidance was considered in conducting the EIA:

- DEA, (2012), Guideline 7 – Public participation in the Environmental Impact Assessment process
- DEA, (2012), Guideline 9 – Need and desirability
- DEAT, (2006), Guideline 3 – General guide to the Environmental Impact Assessment Regulations
- DEAT, (2006), Guideline 4 – Public participation in support of the Environmental Impact Assessment Regulations
- DEAT, (2006), Guideline 5 – Assessment of alternatives and impacts in support of the Environmental Impact Assessment Regulations

4.3 CONCLUSION

The Environmental Impact Assessment was undertaken in accordance with the Environmental Impact Assessment Regulations (2014) published in GNR 982, in terms of Section 24(5) and 44 of the National Environmental Management Act, 1998 (Act No 107 of 1998) as amended as well as all relevant National legislation, policy documents, and national guidelines.

4 THE NEED AND DESIRABILITY

This section aims to address the following requirements of the regulations:

Appendix 3. (3) An EIR (...) must include-

(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;

4.1 THE NEED FOR THE PROPOSED ACTIVITY

The proposed development is a direct result of the urgent housing need experienced in Siyabuswa. The establishment of the proposed residential area will assist in alleviating the immediate housing shortage. According to the DRJSMLM IDP the population growth of the Municipality is estimated at 1,06% per annum which is contributing to housing shortages (DRJSMLM IDP, 2015-2016:22) - refer to table 4.1 for a comparison of household statistics within the municipality between 2001 and 2011 as obtained from Census 2001 and 2011 data:

Table 4.1: Household comparison within the Dr. JS Moroka Local Municipality between 2001 and 2011 per Census data.

	CENSUS 2001	**CENSUS 2011**
HOUSEHOLD NUMBER	54 339	62 162
AVERAGE SIZE	4.45%	4.01%
PROVISION OF ELECTRICITY (LIGHTING)	91.81%	96.87%
SANITATION: FLUSH CHEMICAL TOILETS	13.44%	15.94%
REFUSE REMOVAL	12.33%	13.65%
ACCESS TO WATER: TAP INSIDE YARD	73.61%	55.74%
TENURE STATUS	72.08%	82.37%

Development of the area concerned will not only provide in a tangible housing need, but will also form an important link to ensure the future integrated and long term sustainable development of the urban area – refer to Table 3.2 for the objectives identified by the DRJSMLM IDP.

4.2 THE DESIRABILITY OF THE PROPOSED ACTIVITY

The proposed development's contribution towards sustainable development and the associated benefits to society in general is discussed below:

- Alternative land uses - The desirability of the proposed residential extension may be motivated in view of the ideal location of the site, which is currently vacant and available for development, accessible within the larger urban area and in close proximity of employment opportunities. Furthermore, the land area proposed for the development consists of land used for illegal dumping, and nothing of note was identified from an ecological or conservation perspective.
- Provision of formal housing - According to the DRJSMLM Integrated Development Plan (IDP) households are growing at 1.35% per annum, with a large percentage of household still without municipal tap water and flush toilets (DRJSMLM IDP, 2015:28). The proposed development will avoid unofficial and informal housing developments through pro-active provision of sufficient number of formal erven.
- Micro-economy - The proposed development will support and promote opportunities for economic development and growth for the society in general, since the proposed development will provide several direct and indirect part-time employment opportunities and capacity generation. There are basically two phases of the proposed development, of which each will have a significant impact on the micro economy of the region. The first being the construction phase, which will positively affect the micro economy, as most of the required building material, labour force, etc. will be obtained from Siyabuswa and surrounding areas. The second phase is the township itself, which will require back-up services for e.g. maintenance, daily necessities, etc. The Township will thus have a long-term positive effect on the micro economy of the Siyabuswa region. Where possible, local people will be employed as maintenance workers, cleaning staff, security personal, etc., which in turn will enrich and benefit the local community.
- Provision of services - The sustainable provision of services such as roads, water, sanitation and waste will be a prerequisite for the development. The minimum standards in respect of service provision are to be adhered to. This implies that the quality of service expected would have to be high and satisfactory.
- Counter urban sprawl and create compact urban spaces - The proposed development is located within the designated urban edge which suggests that it is in line with the principle to counter urban sprawl and to create compact quality urban spaces serving dense residential areas.
- Quality urban environment – The proposed development will create a quality well balanced urban environment, which is convenient, attractive and safe.

5 DESCRIPTION OF ENVIRONMENTAL ISSUES

This section aims to address the following requirements of the regulations:

Appendix 3. (3) An EIR (...) must include-

(g) A motivation for the preferred development footprint within the approved site (i) details of all the alternatives considered;

(h) a full description of the process followed to reach the proposed development footprint, within the approved site, including –

(i) details of all the development footprint alternatives considered;

(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;

(iii) 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;

(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;

(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such; and

(xi) a concluding statement indicating the preferred alternative development location within the approved site.

5.1 CONSIDERATION OF ALTERNATIVES

The DEAT 2006 guidelines on 'assessment of alternatives and impacts' proposes the consideration of four types of alternatives namely, the no-go, location, activity, and design alternatives. It is however, important to note that the guidelines specifically state that only 'feasible' and 'reasonable' alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the developer and EAP, which in some instances culminates in a single preferred project proposal. The following sections explore each type of alternative in relation to the proposed activity.

5.1.1 No-go alternative

This alternative considers the option of 'do nothing' and maintaining the status quo. The description provided in section 2.2 of this report could be considered the baseline conditions (status quo) to persist should the no-go alternative be preferred. The existing status of the land could be described as abandoned agricultural fields. The land has not been used for agricultural purposed for the preceding ten years due to the fact that the local community is mainly interested in land for residential purposes and not commercial cultivation or grazing. The latter will require extensive capital and infrastructure not available to the community. In

view of the housing need in the community the 'no go' option would also, from a social perspective, worsen the environmental impact associated with informal housing and a lack of services infrastructure. The potential opportunity costs in terms of the supporting social and economic development in the area would also be lost.

5.1.2 Location alternatives

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity. Various location alternatives were considered in line with the IDP & SDF. However, the SDF confirms that no other land of similar extent is available for the development of housing over the short term. According to the SDF (2014) the following areas are earmarked as Expansion Areas within the larger Spatial Development Area:

- Kameeldrift A (Area earmarked for future development);
- Waterval B (Area earmarked for future development); and
- Mapoch/Weltevreden (Area earmarked for future development).

From an environmental perspective, the proposed site is considered highly desirable due to its location within the urban edge (i.e. service provision), environmental conditions (i.e. geology, agricultural potential, ecological and archaeology sensitivity), as well as site access (i.e. to facilitate the movement of people during the operational phase). No alternative locations on portion 48 of the farm Valschfontein No. 33 exist.

5.1.3 Activity alternatives

The scoping process also needs to consider if residential development would be the most appropriate land use for the site. As already mentioned and described in detail in section 2.2 the land currently consists of land used for illegal dumping. To guide the consideration of alternative land uses the SDF was consulted as to the proposed strategic land uses for the area. As already indicated in previous sections the SDF clearly indicates the land as ideal for residential extension to fulfill the current housing need.

5.1.4 Design and layout alternatives

Design alternatives were also considered throughout the planning and design phase (i.e. what would be the best design option for the development?). In this regard discussions on the design were held between the EAP and the planning consultant. It is envisaged that the following environmental features will need to be considered:

- How to accommodate existing infrastructure such as access roads, storm water canals and electricity lines.
- How to make provision for the maximum accessibility for pedestrians.
- How to accommodate the foundations in the restricted excavation depth.

The layout plan is included under Layout Maps as an Appendix to this report.

5.2 PUBLIC PARTICIPATION PROCESS

The following sections provide detailed information on the public participation process conducted in terms of Regulations 39 to 44.

5.2.1 General

The public participation process was conducted strictly in accordance with Regulations 39 to 44. The following three categories of variables were considered when deciding the required level of public participation:

- The scale of anticipated impacts
- The sensitivity of the affected environment and the degree of controversy of the project
- The characteristics of the potentially affected parties

Since the scale of anticipated impacts is low, the site already being degraded and the fact that no conflict was foreseen between potentially affected parties, no additional public participation mechanisms were considered at this stage of the process. The following actions have already been taken:

- Newspaper advertisement

  Since the proposed development is unlikely to result in any impacts that extent beyond the municipal area where it is located, it was deemed sufficient to advertise in a local newspaper. An advertisement was placed in English in the local newspaper (Sekhukhune Dispatch) on the 25 November 2016 (see Appendix B) notifying the public of the EIA process and requesting Interested and Affected Parties (I&APs) to register with, and submit their comments to Environamics Environmental Consultants. I&APs were given the opportunity to raise comments within 30 days of the advertisement.

- Site notices

  Site notices were placed on site in English on the 2 November 2016 to inform surrounding communities and immediately adjacent landowners of the proposed development. I&APs were given the opportunity to raise comments by 15 December 2016. Photographic evidence of the site notices is included in Appendix C.

- Direct notification of identified I&APs & circulation of Draft Scoping Report

  Identified I&APs, including key stakeholders representing various sectors, were directly informed of the proposed development via email on 18 November 2016 and were requested to submit comments on the Draft Scoping Report (DSR) by 9 January 2017. For a complete list of stakeholder details see Appendix D and for proof of the emails see Appendix E. The consultees included:

- Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA)
- The South African Heritage Resources Agency (SAHRA)
- The Provincial Heritage Resources Agency (PHRA), Mpumalanga Branch
- Department of Public Works, Roads and Transport, Mpumalanga
- The Department of Mineral Resources (Northern Regions)
- ESKOM
- The Nkangala District Municipality
- The Municipal Manager at the Siyabuswa Local Municipality
- The Local Councilor at the Siyabuswa Local Municipality
- KMC Geomatics Inc. – Mr. James Nkosi

It was expected from I&APs to provide their inputs and comments within 30 days after receipt of the Draft report. To date only KMC Geomatics Inc. provided comments (see Appendix F for written comments).

➢ <u>Direct notification of surrounding land owners and occupiers</u>

Written notices were also provided to all surrounding land owners and occupiers on 18 November 2016 – refer to Appendix E for the proof of correspondence. The surrounding land owners were given the opportunity to raise comments by 9 January 2017.

Figure 7: Surrounding Land Owners

- Circulation of the Draft Environmental Impact Assessment Report
  The following registered I&APs and State Department were informed of the availability of the Draft EIR on 13 March 2017 (refer to Appendix E):

  - Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA)
  - The South African Heritage Resources Agency (SAHRA)
  - The Provincial Heritage Resources Agency (PHRA), Mpumalanga Branch
  - Department of Public Works, Roads and Transport, Mpumalanga
  - The Department of Mineral Resources (Northern Regions)
  - ESKOM
  - The Nkangala District Municipality
  - The Municipal Manager at the Siyabuswa Local Municipality
  - The Local Councilor at the Siyabuswa Local Municipality
  - KMC Geomatics Inc. – Mr. James Nkosi

They are expected to provide their inputs and comments within 30 days after receipt of the Draft report (by 13 April 2017).

5.2.2 Consultation process

Regulation 41 requires that the municipality, relevant ward councillor and any organ of state having jurisdiction in respect of any aspect of the activity should be given written notice of the activity. A complete list of all the consultees who received written notice as well as proof of correspondence is attached as Appendices D and E.

5.2.3 Registered I&APs

I&APs include all stakeholders who deem themselves affected by the proposed activity. According to Regulation 43(1) "*A registered interested and affected party is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application*."

5.2.4 Issues raised by IAPs and consultation bodies

Table 5.1 summarises the comments received from consultation bodies. The full wording and original correspondence is included in Appendix F.

Table 5.1: Issues raised by key consultation bodies

Organisation	Person	Written comment (see Appendix F)
KMC Geomatics Inc.	Marié van der Merwe on behalf of Mr. James Nkosi	In an email dated 30 November 2016 Ms. Van der Merwe confirmed receiving the surrounding land owner letter dated 16 November 2016 and asked to be registered as an I&AP. She also indicated that they are acting on behalf of Mr. James Nkosi (Portion 36 of the farm Valschfontein No. 33 – JS).

5.3 THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE PREFERRED ALTERNATIVE

The following sections provide general information on the biophysical and socio-economic attributed associated with the preferred alternative.

5.3.1 Biophysical environment

The biophysical environment is described with specific reference to geology and soils, vegetation and landscape features, climate and general biodiversity. However, since the area proposed for development is surrounded by residential development and consist of abandoned agricultural fields, nothing of note was identified from an ecological or conservation point of view apart from some natural vegetation on site.

5.3.1.1 Geology and soils

According to Engineering Geological Investigation (refer to Appendix H1) the site is underlain by grey to pink coarse-grained granite of the Nebo Granite, Lebowa Granite Suite from the Bushveld Complex. Surficial deposits include quaternary sand, covering the lithology. No dolomite occurs in the area therefore no stability investigation is required.

Minor problems regarding the ability to excavate can be expected almost across the site. The competent TLB refused in all test pits and the refusal depth usually varied from 0,9m to 1,2m from surface in the test pits with only test pit S5 reaching a depth of 1,8m with difficult excavation noted. To ensure the stability of excavations, it will need standard sidewall protection in all excavations exceeding 1,5m.

No mining activities on site or history of mining or contaminated land in the area were found. The site is located far from any mining activities and in an inactive area regarding seismic activity. Due to the level of development surrounding the area, the likelihood for the development of borrow pits on site are low.

The silty sand on site has a very low clay percentage and may be found fit for use in the building industry, and as backfilling for the placement bedding of service pipes. All road

building and construction materials will be sourced from established commercial activities in and around Siyabuswa.

5.3.1.2 Vegetation and landscape features

In terms of vegetation type the site falls within the Central Sandy Bushveld vegetation type (Mucina and Rutherford, 2006). Central Sandy Bushveld vegetation type, is described by Mucina and Rutherford (2006) as 'Vulnerable'. Central Sandy Bushveld vegetation covers areas of Gauteng, North-West, Mpumalanga and Limpopo Provinces. Undulating terrain occurs mainly in a broad arc south of the Springbokvlakte from the Pilansberg in the west through Hammanskraal and Groblesdal to GaMasemola in the east.

The region is characterised by low, undulating areas, sometimes between mountains, and sandy plains and catenas supporting tall, deciduous *Terminalia sericea* and *Burkea Africana* woodlands on deep sandy soils, and low, broad leaved *Combretum* woodlands on shallow, rocky or gravelly soils. Species of *Acacia, Ziziphus* and *Euclea* are found on flats and lower slopes on eutrophic sands and some less sandy soils. *A. tortilis* may dominate some areas along valleys. Grass-dominated herbaceous layer with relatively low basal cover on dystrophic sands.

5.3.1.3 Climate

The area is characterised by summer rainfall and very dry winters. Effectively three seasons, namely a cool dry season from May to mid-August, a hot dry season from mid-August to October and a hot wet season from about November to April. Mean Annual Precipitation (MAP) ranges from about 500-700 mm, with frequent frost. Mean monthly maximum and minimum temperatures are 35.3°C and -3.1°C for November and June respectively.

5.3.1.4 Biodiversity

According to the Provincial Data Base (Mpumalanga Biodiversity Conservation Plan), the site does not fall within a sensitive area or an ecological corridor. The site has already been transformed to some extent and degraded and limited features of biodiversity sensitivity exist on site. Taking into consideration the transformed site status and the absence of sensitive/important species on site, it is not anticipated that it will have a negative impact on biodiversity.

5.3.1.5 Traffic consideration

The proposed township will gain access to the surrounding road network via an existing intersection along the R568. Traffic surveys were conducted on Tuesday 7 February 2017 during the critical weekday AM and weekday PM peak periods. The weekday AM and PM peak hours occurred between 07h00 and 08h00 in the morning and between 16h15 to 17h15 in the afternoon. Low peak hour traffic volumes are currently present on the road network and acceptable operating conditions prevail along the critical surrounding intersections. No road improvements are required on the road network to cater for the existing traffic volumes or expected growth in background traffic. The development is

expected to generate a maximum of 853 additional peak hour trips during the weekday AM peak hour (400 trips inbound and 453 trips outbound) and 645 trips during the weekday PM peak hour (327 trips inbound and 318 trips outbound). Considering the additional development traffic, road improvements will be required at the intersection along the R568 which will provide access to the township. The area surrounding the proposed township is characterised by low vehicle ownership. Public transport and non-motorised transport facilities will be required.

5.3.2 Description of the socio-economic environment

The socio-economic environment is described with specific reference to social, economic, heritage and cultural aspects.

5.3.2.1 Socio-economic conditions

The Dr. JS Moroka Local Municipality (DRJSMLM) is situated in the northern part of the Nkangala District Municipality which is situated in the north-western part of the Mpumalanga Province, with Siyabuswa as the capital town. It forms part of the larger economic region of the City of Tshwane, City of Johannesburg, Emalahleni and Steve Tshwete (previously Middelburg) Municipalities, due to the fact that these areas provide employment opportunities to a sizable number of the municipality's population. The geographical area includes 55 villages. It is characterised by a variety of urban, peri-urban and rural areas. Land use is largely for residential purposes, with some pieces of land falling under the control of traditional leadership. The municipal area comprises a total area of 1 416 km² and is home to a total population of ±249 705 people which amounts to ~62 162 households.

There are 63 383 economically active (employed or unemployed but looking for work) individuals within the municipality, 46, 6% of whom are unemployed. Of the 31 063 economically active youth aged 15–34 years in the area, 61,4% are unemployed – refer to table 5.2 for population statistics.

Table 5.2: Population statistics

Demographics	**1996**	**2001**	**2011**
Population size	259 302	243 313	249 705
Annual population Growth	0.64%	0.26%	0.26%
Population composition			
Male	47%	45.70%	47%
Female	53%	54.30%	53%
Sex Ratio	87%	84.15%	88.87%
% population (0 -14 years)	38.41%	37.91%	32.62%
% population (14 - 35 years)	38.92	38.62%	37.47%
% population (15 - 64 years)	53.94%	55.62%	59.45%
% population (65+ years)	7.65%	6.47%	7.93%
Population Group			
African/Black	99.89%	99.85%	99.44%

Coloured	0.08%	0.08%	0.10%
Indian/Asian	0.02%	0.02%	0.27%
White	0.02%	0.05%	0.06%
Other	-	-	0.13%
% persons with disability	7.39%	5.8%	-
Employment			
Employed	-	-	42%
Unemployed	-	-	36%
Discouraged work seekers	-	-	13%
Not economically active	-	-	9%

The largest contributor to the Municipality's economy is the Community Services (43,4%), with Trade at 20%, followed by Finance, Construction and Private Households all at approximately 7%.

The Local Municipality is experiencing economic development inputs and intends to upgrade the provision of houses and services. The proposed development can be viewed as critical for the development cycle the local region as it will:

- Create infrastructure to lure investment to the region; and
- Address the need for residential growth.

It is envisaged that the proposed development will have only positive social and economic impacts for the local area as it will provide formal housing with municipal services.

5.3.2.2 Cultural and heritage aspects

Special attention was given to the identification of possible cultural or heritage resources on site. The initial site investigation concluded that there are no obvious heritage resources located on the site earmarked for development. However, a Heritage Impact Assessment (HIA) has been conducted to ensure that there would be no impact on cultural or historical features as a result of the proposed activity.

According to the Heritage Impact Assessment (attached as Appendix H3) the cultural landscape qualities of the region is made up of a pre-colonial element consisting of limited Stone Age and Iron Age occupation, as well as a much later colonial (farmer) component, which gave rise to an urban component.

The larger region is rich in heritage sites dating to the historical period, and has an intricate history of conflict and political machinations. During the 1830s early white settlers, migrating away from the British ruled Cape area, started advancing further inland in a movement, named the *Groot Trek*, in an effort to find new fertile farm land and escape the various social and political pressures surrounding the Cape colony. The formation of the ZAR, established as an independent Boer country within South Africa in 1852, plays an important role in the history of the region.

However, the area remained up till today, a largely farming orientated community. Much of the heritage potential of the study area is therefore located within the many farmsteads in the area. Farmhouses and related structures (e.g. barns, sheds, etc.), as well as cemeteries dot the landscape. Equally important, are the homesteads, related structures and cemeteries of the farm labourers living on these farms.

A site visit was conducted on 12 November 2016. The area was investigated by travelling transects across it – refer to figure 8 below.

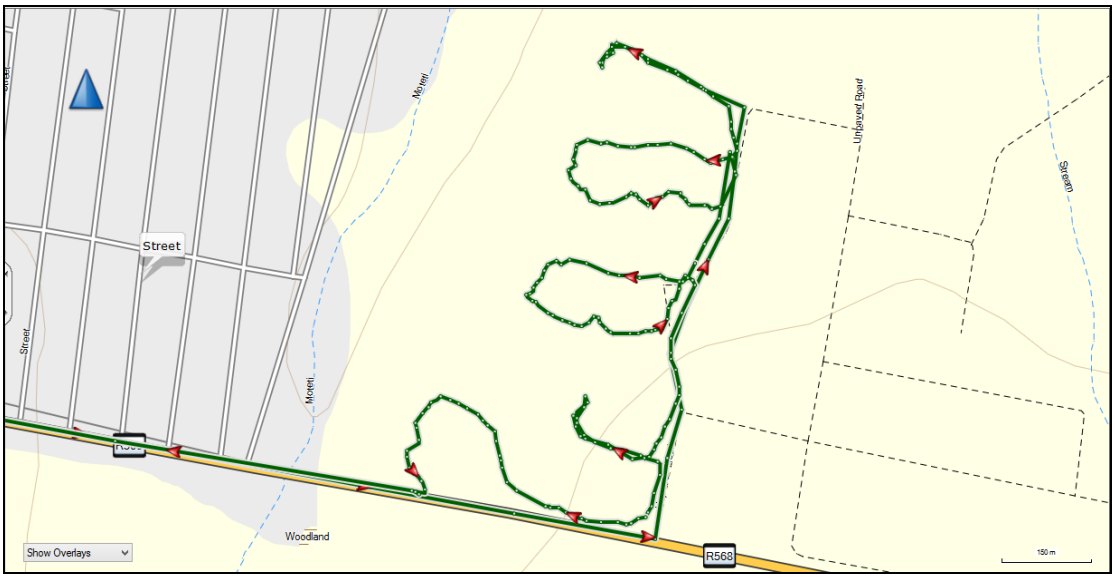

Figure 8: Map indicating the track log of the field survey

No sites, features or objects dating to the Stone age, Iron age or historic period were identified in the study area.

From a heritage point of view the following condition will apply:

- To address any subsurface cultural or heritage resources it needs to be clearly stated in the construction environmental management plan, submitted with the EIA report, that SAHRA will be informed immediately should any artefacts be exposed during construction. Training of contractors on heritage issues will also form part of the contractor's brief.

5.4 SITE SELECTION MATRIX

The SDF confirms that the location of the specific development has long since been identified as the next phase in the future expansion of Siyabuswa (refer to Figure 3 for the SDF of Dr JS Moroka).

From an environmental perspective, the proposed site is considered highly desirable due to its location within the urban edge (i.e. service provision), site access (i.e. to facilitate the movement of people during the operational phase), environmental conditions (i.e. geology, soils, agricultural potential, and ecological and archaeology sensitivity) – refer to Table 5.3

for the site selection matrix. As a result, no other location alternatives are considered as part of the EIA process.

Table 5.3: Site selection matrix

Site selection criteria	**Site 1**	**N/A**
Location	Within urban edge	-
Site access	Direct access off R568	-
Geology & soils	Suitable	-
Vegetation & landscape features	Nothing of note	-
Agricultural potential	Low	
Biodiversity	Low	-
Cultural & heritage features	None	-

5.5 CONCLUDING STATEMENT ON ALTERNATIVES

In conclusion, the preferred alternative entails the following:

- The establishment of a township on a Portion of Portion 48 of the farm Valschfontein No. 33, Registration Division JS, Mpumalanga Province - refer to Section 2 of this report.

6 DESCRIPTION OF THE IMPACTS AND RISKS

This section aims to address the following requirements of the regulations:

Appendix 3. (3)(h) An EIR (...) must include-

(h) a full description of the process followed to reach the proposed development footprint, within the approved site, including –

(v) the impacts and risks identified, 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;

(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(vii) 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; and

(viii) the possible mitigation measures that could be applied and level of residual risk

(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 location through the life of the activity, including-

(i) a description of all environmental issues and risks that were identified during the EIA process; and

(ii) 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-

(i) cumulative impacts;

(ii) the nature, significance and consequences of the impact and risk;

(iii) the extent and duration of the impact and risk;

(iv) the probability of the impact and risk occurring;

(v) the degree to which the impact and risk can be reversed;

(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and

(vii) 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;

6.1 SCOPING METHODOLOGY

The contents and methodology of the scoping report aims to provide, as far as possible, a user-friendly analysis of information to allow for easy interpretation.

- Checklist (see section 6.1.1): The checklist consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts.

- Matrix (see section 6.1.2): The matrix analysis provides a holistic indication of the relationship and interaction between the various activities, development phases and the impact thereof on the environment. The method aims at providing a first order cause and effect relationship between the environment and the proposed activity. The matrix is designed to indicate the relationship between the different stressors and receptors which leads to specific impacts. The matrix also indicates the specialist studies, which will be submitted as part of the Environmental Impact Report in order to address the potentially most significant impacts.

6.1.1 Checklist analysis

The independent consultant conducted a site visit on 2 November 2016. The site visit was conducted to ensure a proper analysis of the site-specific characteristics of the study area. Table 6.1 provides a checklist, which is designed to stimulate thought regarding possible consequences of specific actions and so assist scoping of key issues. It consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts. The table highlights certain issues, which are further analysed in matrix format in section 6.2.

Table 6.1: Environmental checklist

QUESTION	YES	NO	Un-sure	Description
1. Are any of the following located on the site earmarked for the development?				
I. A river, stream, dam or wetland		✕		None.
II. A conservation or open space area		✕		None.
III. An area that is of cultural importance		✕		Heritage Impact Assessment (refer to Appendix H3) concluded that no heritage resources are located on the site earmarked for development.
IV. Site of geological significance		✕		None.
V. Areas of outstanding natural beauty		✕		None.
VI. Highly productive agricultural land		✕		None.
VII. Floodplain		✕		None.
VIII. Indigenous forest		✕		None.

IX. Grass land		✕		None.
X. Bird nesting sites		✕		None.
XI. Red data species		✕		None.
XII. Tourist resort		✕		None.
2. Will the project potentially result in potential?				
I. Removal of people		✕		None.
II. Visual Impacts		✕		None.
III. Noise pollution		✕		Construction activities will result in the generation of noise over a period of months. The noise impact is unlikely to be significant.
IV. Construction of an access road		✕		Ready access to the site exists off the R568.
V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		✕		The sewerage system design should ensure that no sewage effluent impacts on the surrounding environment.
VI. Accumulation of large workforce (>50 manual workers) into the site.	✕			Approximately 50 employment opportunities will be created during the construction phase of the project. Although the exact number of workers is uncertain, the construction EMPr will stipulate proper management arrangements for the workforce.
VII. Utilisation of significant volumes of local raw materials such as water, wood etc.		✕		The construction EMP will stipulate proper management arrangements.
VIII. Job creation	✕			Approximately 50 employment opportunities will be created during the construction phase.
IX. Traffic generation	✕			During construction and operation, the development will generate additional traffic. A traffic Impact Assessment is included as Appendix H4 to this report.

X. Soil erosion		✕		The site will need to be cleared or graded, which may potentially result in a degree of dust being created, increased runoff and potentially soil erosion. Management measures for soil erosion during construction will be included in the EMPr.
XI. Installation of additional bulk telecommunication transmission lines or facilities		✕		None.
3. Is the proposed project located near the following?				
I. A river, stream, dam or wetland	✕			A non-perennial stream is located approximately 200m west of the site. However, the site is not located within the 1:100 years floodline.
II. A conservation or open space area		✕		None.
III. An area that is of cultural importance		✕		None.
IV. A site of geological significance		✕		None.
V. An area of outstanding natural beauty		✕		None.
VI. Highly productive agricultural land		✕		None.
VII. A tourist resort		✕		None.
VIII. A formal or informal settlement	✕			The existing Siyabuswa-la & Ouvalosvontein low income residential areas are located directly to the east and west of the study area – refer to Figures 1.

6.1.2 Matrix analysis

The matrix describes the relevant listed activities, the aspects of the development that will apply to the specific listed activity, a description of the environmental issues and potential impacts, the significance and magnitude of the potential impacts, and the mitigation of the potential impacts. The matrix also highlights areas of particular concern (see Table 6.2) which requires more in depth assessment. An indication is also provided of the specialist studies which were conducted. Each cell is evaluated individually in terms of the nature of the impact, duration and its significance – should no mitigation measures be applied. This is important since many impacts would not be considered insignificant if proper mitigation measures were implemented. The matrix also provides an indication if mitigation measures are available.

To conceptualise the different impacts the matrix specify the following:

- **Stressor**: Indicates the aspect of the proposed activity, which initiates and cause impacts on elements of the environment.
- **Receptor**: Highlights the recipient and most important components of the environment affected by the stressor.
- **Impacts**: Indicates the net result of the cause-effect between the stressor and receptor.
- **Mitigation**: Impacts need to be mitigated to minimise the effect on the environment.

Table 6.2: Matrix analysis

For ease of reference the significance of the impacts is colour-coded as follow:

Low significance	Medium significance	High significance	Positive medium impact	Positive minor impact

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS			SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS			SPECIALIST STUDIES / INFORMATION
			Receptors	Impact description / consequence	Minor/Medium	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures	Level of residual risk	
CONSTRUCTION PHASE															
Activity 28(i) (Regulation 983): *"Residential, mixed… developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares."* Activity 15 (Regulation 984): *"The clearance of an area of 20 hectares or more of indigenous vegetation."*	The potentially most significant impacts will occur during the construction phase of the development, which will include the following activities: • Site clearing and preparation Certain areas of the site will need to be cleared of vegetation and some areas may need to be levelled. • Civil works The main civil works are: ○ Terrain levelling if necessary– Levelling will be minimised by locating the site on the flatter areas within the available 35 hectares. ○ Housing foundation- The exact method will depend on the detailed geotechnical analysis. ○ Construction of access and inside roads and pedestrian paths – existing paths will	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	• Loss or fragmentation of indigenous natural vegetation. • Loss or fragmentation of habitats.	-		S	S	Pr	IR	ML	Yes	- Site clearing must take place in a phased manner, as and when required. - No trapping or snaring to fauna on the construction site should be allowed.	L	-
			Air	• Air pollution due to the increase of traffic of construction vehicles.	-		S	S	D	CR	NL	Yes	- Dust suppression measures must be implemented for heavy vehicles such as wetting of gravel roads on a regular basis and ensuring that vehicles used to transport sand and building materials are fitted with tarpaulins or covers.	L	-
			Soil	• Soil degradation, including erosion. • Disturbance of soils and existing land use (soil compaction). • Physical and chemical degradation of the soils by construction vehicles (hydrocarbon spills).	-		S	M	Po	PR	ML	Yes	- The necessary silt fences and erosion control measures must be implemented in areas where these risks are more prevalent. - Vehicles and equipment shall be serviced regularly to avoid the	L	-

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS		SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS			SPECIALIST STUDIES / INFORMATION
		Receptors	Impact description / consequence	Minor/Medium	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures	Level of residual risk	
	be used were reasonably possible. ○ Services – the majority of service infrastructure will be buried underground.											contamination of soil from oil and hydraulic fluid leaks etc.		
		Geology	• Erodible soil. • Hard/compact geology. • Stability of excavations	-		S	S	D	BR	NL	Yes	- The most effective mitigation will be the minimisation of the project footprint by using the existing roads in the area and not create new roads to prevent other areas also getting compacted. - If an activity will mechanically disturb below surface in any way, then any available topsoil should first be stripped from the entire surface and stockpiled for re-spreading during rehabilitation.	L	Geological Investigation
		Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the local sewage plant. • Increase in construction vehicles on existing roads.		-	S	S	D	PR	ML	Yes	-	L	Civil services report & confirmation from the Local Municipality
		Ground water	• Pollution due to construction vehicles.	-		S	S	Pr	CR	ML	Yes	-	L	-
		Surface water	• Increase in storm water run-off. • Pollution of water sources due to soil erosion.	-		S	S	Pr	PR	ML	Yes	- Silt fences should be used to prevent any soil entering the stormwater drains - Any hazardous	L	-

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS			SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS			SPECIALIST STUDIES / INFORMATION
			Receptors	Impact description / consequence	Minor/Medium	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures	Level of residual risk	
													substances must be stored at least 200m from any of the water bodies on site.		
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	• Job creation. • Business opportunities. • Skills development.	+		P	S	D	I	N/A	Yes	- Where reasonable and practical, the Municipality should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories.	L	-
			Visual landscape	• Potential visual impact on residents and motorists in close proximity to proposed development.	-		S	S	D	CR	NL	Yes	- Dust suppression will play an important role to minimise the visibility of dust. - Good housekeeping should be implemented. - Proper rehabilitation of disturbed areas	L	-
			Traffic volumes	• Increase in construction vehicles.	-		S	S	Pr	CR	NL	Yes	The development may commence without influencing the levels-of-service for the local road network.	L	Traffic Impact Assessment
			Health & Safety	• Air/dust pollution. • Road safety. • Impacts associated with the presence of construction workers on site and in the area.	-		L	S	Pr	PR	ML	Yes	- It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site. - An HIV/AIDS awareness	L	-

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS		SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS			SPECIALIST STUDIES / INFORMATION
		Receptors	Impact description / consequence	Minor/Medium	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures	Level of residual risk	
												programme for all construction workers should be implemented at the outset of the construction phase;		
		Noise levels	• The generation of noise as a result of construction vehicles, the use of machinery such as drills and people working on the site.	-		L	S	D	CR	NL	Yes	- During construction care, should be taken to ensure that noise from construction vehicles and plant equipment does not intrude on the surrounding residential areas. Plant equipment such as generators, compressors, concrete mixers as well as vehicles should be kept in good operating order and where appropriate have effective exhaust mufflers.	L	-
		Tourism industry	• Since there are no tourism facilities in close proximity to the site, the proposed activities will not have an impact on tourism in the area.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Heritage resources	• Removal or destruction of archaeological and/or paleontological sites. • Removal or destruction of buildings, structures, places and	-		S	S	Po	I	ML	Yes	- Any discovered artifacts shall not be removed under any circumstances. Any destruction of a site can only be allowed once	L	Heritage Impact Assessment

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS			SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS			SPECIALIST STUDIES / INFORMATION
			Receptors	Impact description / consequence	Minor/Medium	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures	Level of residual risk	
				equipment of cultural significance. • Removal or destruction of graves, cemeteries and burial grounds.									a permit is obtained and the site has been mapped and noted. Permits shall be obtained from the SAHRA should the proposed site affect any world heritage sites or if any heritage sites are to be destroyed or altered.		
OPERATIONAL PHASE															
• *"Residential, mixed… developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares."*	The following activities will take place during the operational phase of the proposed development: • <u>Township</u> – Residential and associated land uses are proposed on the site. • <u>Supporting Infrastructure</u> - Bulk services infrastructure (water, sewage, waste, electricity) will need to be provided in order to ensure the sustainability of the proposed development. • <u>Roads</u> – Access will be obtained from the R568 Regional Road.	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	• Fragmentation of habitats. • Establishment and spread of declared weeds and alien invader plants (operations).	-		S	L	D	PR	ML	Yes	- Indigenous vegetation must be maintained and all exotics removed as they appear and disposed of appropriately.	L	-
			Air quality	• The proposed development will not result in any air pollution during the operational phase.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
			Soil	• Soil degradation, including erosion. • Disturbance of soils and existing land use (soil compaction). • Physical and chemical degradation of the soils.	-		L	L	D	PR	ML	Yes	- An effective system of run-off control should be implemented, where it is required, that collects and safely disseminates run-off water from all hardened surfaces and prevents potential down slope erosion.	L	-
			Geology	• Erodible soil. • Hard/compact geology. • Areas subject to seismic activity. • Areas subject to flooding.	-		S	S	Po	PR	ML	Yes	- Surface drainage should be provided to prevent water ponding. - Mitigation measures proposed by the detailed engineering geological investigation should be implemented.	L	Geological Investigation

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS			SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS			SPECIALIST STUDIES / INFORMATION
			Receptors	Impact description / consequence	Minor/Medium	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures	Level of residual risk	
			Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the municipal sewerage system and the local sewage plant. • Increased consumption of water. • Increase in storm water. • Increased consumption of electricity.	-		L	L	D	PR	ML	Yes	- Waste has to be accommodated at a licensed landfill site.	L	Civil services report & confirmation from the Local Municipality
			Ground water	• Leakage of hazardous materials. Leakage of household oils can contaminate water supplies.	-		L	L	Po	PR	ML	Yes	-	L	-
			Surface water	• Increase in storm water runoff. The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion. • Leakage of hazardous materials.	-		L	L	Pr	PR	ML	Yes	- The storm water management plan must include the construction of appropriate design measures that allow surface and subsurface movement of water along drainage lines so as not to impede natural surface and subsurface flows.	L	-
		SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	• Job creation. • Skills development.	+		L	L	D	I	N/A	Yes	-	N/A	-
			Visual landscape	• Since the site is located in an area characterised by residential developments, visual impacts will not be applicable.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-	N/A	-

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS		SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS			SPECIALIST STUDIES / INFORMATION
		Receptors	Impact description / consequence	Minor/Medium	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures	Level of residual risk	
		Traffic volumes	• Increased traffic from households located in the area.	-		L	L	D	PR	NL	Yes	- Upgrading of the intersection of the R568 / Road C by means of: - Construction of a roundabout with a typical inside diameter of 30m and a 5m circular lane – preferred option (the dimensions of the roundabout should be confirmed during the detailed design thereof), or; - Installation of a traffic signal with turning lanes along all approaches.	L	Traffic Impact Assessment
		Health & Safety	• Services (waste, water, storm water, sewerage) design failures occur.		-	P	L	D	I	ML	Yes	-	L	Civil Services Report
		Noise levels	• The proposed development will not result in any noise pollution during the operational phase.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Tourism industry	• Since there are no tourism facilities in close proximity to the site, the proposed activities will not have an impact on tourism in the area.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
		Heritage resources	• It is not foreseen that the proposed activity will impact on heritage resources or vice versa.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-
		Local	• Quality well balanced urban	+		L	L	Pr	I	N/A	Yes	-	N/A	-

LISTED ACTIVITY (The Stressor)	ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS			SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS							MITIGATION OF POTENTIAL IMPACTS			SPECIALIST STUDIES / INFORMATION
		Receptors		Impact description / consequence	Minor/Medium	Major	Extent	Duration	Probability	Reversibility	Irreplaceable loss of resources	Possible Mitigation	Possible mitigation measures	Level of residual risk	
			community	environment, which are convenient, attractive and safe.											

Nature of the impact:	(N/A) No impact	(+) Positive Impact (-)	Negative Impact		
Geographical extent:	(S) Site;	(L) Local/District;	(P) Province/Region;	(I) International and National	
Probability:	(U) Unlikely;	(Po) Possible;	(Pr) Probable;	(D) Definite	
Duration:	(S) Short Term;	(M) Medium Term;	(L) Long Term;	(P) Permanent	
Intensity / Magnitude:	(L) Low;	(M) Medium;	(H) High;	(VH) Very High	
Reversibility:	(CR) Completely Reversible;	(PR) Partly Reversible;	(BR) Barely Reversible;	-	
Irreplaceable loss of resources:	(IR) Irreversible	(NL) No Loss;	(ML) Marginal Loss;	(SL) Significant Loss;	(CL) Complete Loss
Level of residual risk:	(L) Low;	(M) Medium;	(H) High;	(VH) Very High	-

6.2 KEY ISSUES IDENTIFIED

From the above it is evident that mitigation measures should be available for potential impacts associated with the proposed activity and development phases. The scoping methodology identified the following key issues which were addressed in more detail in the EIA report.

6.2.1 Impacts during the construction phase

During the construction phase the following listed activity will have various potential impacts on the biophysical and socio-economic environment:

- Activity 28(i) (Regulation 983): *"Residential, mixed… developments where such land was used for agriculture or afforestation on or after 01 April 1998 and where such development (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares."*
- Activity 15 (Regulation 984): *""The clearance of an area of 20 hectares or more of indigenous vegetation."*

During the construction phase, minor negative impacts are foreseen over the short term. The latter refers to a period of months. The potentially most significant impacts relate to the impacts of the geology on the proposed development, impacts on the existing service infrastructure, socio-economic impacts such as the provision of temporary employment and other economic benefits.

6.2.2 Impacts during the operational phase

During the operational phase the study area will serve as a residential extension of Siyabuswa. The potential impacts during this phase of the development will be permanent in nature. The negative impacts are generally relating to impacts associated with the existing service infrastructure, increase in traffic and potential health and safety impacts (failure of services infrastructure). The operational phase will have a direct positive impact through the provision of employment opportunities for its duration, and the provision of quality housing.

6.2.3 Cumulative impacts

Cumulative impacts could arise if other similar projects are constructed in the area. According to the SDF (2014) the following areas are earmarked as Spatial Development Framework Expansion Areas within the larger Spatial Development Area:

- Kameeldrift A (Area earmarked for future development);
- Waterval B (Area earmarked for future development); and
- Mapoch/Weltevreden (Area earmarked for future development).

The potential for cumulative impacts may therefore exist. However, due to the nature of the proposed development as well as its location within the urban edge, the significance of any

potential cumulative impacts is deemed to be very low. The potentially most significant cumulative impact will relate to the provision of basic services. The EIA Report will include a detailed assessment of the potential cumulative impacts associated with the proposed development.

6.3 ASPECTS TO BE ASSESSED

Table 6.3 below provides a summary of the aspects that need to be assessed as part of the EIR. The aspects are also linked to specialist information that has been obtained. Refer to Table 6.2 for a description of the potential impacts.

Table 6.3: Aspects to be assessed

Aspects / potential impacts	**Specialist studies / technical information**
Impacts during construction phase:	
• Impacts associated with the geology of the site	Geotechnical study
• Impacts on existing services infrastructure	Civil services report & confirmation from the Local Municipality
• Temporary employment and other economic benefits	EAP assessment
• Impacts on heritage resources	Heritage Impact Assessment
• Impacts on traffic	Traffic Impact Assessment
Impacts during the operational phase:	
• Health and safety impacts	Civil Services Report
• Pressure on existing services infrastructure	Civil services report & confirmation from the Local Municipality
• Impacts on traffic	Traffic Impact Assessment
• Provision of quality housing	EAP assessment
• Cumulative biophysical impacts resulting from similar developments in proximity to the proposed activity.	EAP assessment

6.4 SUMMARY OF RECOMMENDATIONS FROM SPECIALIST STUDIES

To address the key issues highlighted in the previous section the following specialist studies and processes were commissioned:

- A Geological Investigation – conducted by Geoset CC (see Appendix H1).
- Civil Services Report – conducted by SCIP Engineering Group (see Appendix H2).
- A Heritage Impact Assessment - conducted by Mr. J.A. van Schalkwyk (see Appendix H3).
- Traffic Study – conducted by Gary Edwards traffic engineering (see Appendix H4).

The following sections summarise the main findings from the specialist reports in relation to the key issues raised during the scoping phase.

6.4.1 Issue 1: Geotechnical suitability

The geotechnical suitability of the site for the proposed development needed to be determined. The main question which needs to be addressed is:

"Are the geotechnical conditions favourable for the development of a township?"

According to the Geological Investigation (Appendix H1) the site is underlain by grey to pink coarse-grained granite of the Nebo Granite, Lebowa Granite Suite, from the Bushveld Complex. Surficial deposits include quaternary sand, covering the lithology. Problems are foreseen regarding the excavatability to 1,5m depth on site. Zoning of the site revealed zones with constraints regarding the collapse potential of the soil, and the following zones were identified:

- A relative thin layer of hillwash or a ferruginised pebble marker consisting of silty sand and gravel represents a low expansive or a slightly collapsible soil, with a thickness of less than 750mm, and an expected range of up to 10 mm of total soil movement measured at surface, underlain by a competent pebble marker or shallow rock granite or core stones or hard pan ferricrete which will restrict excavations for the placement of services and will require pneumatic tools, a competent TLB, a large excavator or rock pecker and even blasting to reach the required depth for the placement of services.

- Normal foundations will be adequate on large portions of the site combined with proper compaction with a wacker or similar compactor of in situ soils below individual footings with soil at or near optimum moisture content, but special foundations where the use of reinforced steel strip foundations and articulation joints or soil rafts with the replacement of in situ soil with inert material may be required.

- Site drainage, a concrete apron of 1,0m around all structures and plumbing and service precautions are advised. It is classified as CR to C1R according the NHBRC guidelines (1995) & SAICE Code of practice (1995) and 1A2F according to the classification for urban development (Partridge, Wood & Brink).

Normal construction techniques will be adequate to enable proper development. This includes the use of compaction techniques with drainage provision as described.

6.4.2 Issue 2: Service Provision

The engineering services report needed to investigate the capacity of the existing service infrastructure. The main question which needed to be addressed was:

> *"What is the status of infrastructure services and to what extent will upgrading be required to ensure sustainable services delivery?"*

The engineering services report (refer to Appendix H2) confirmed the following with regards to Bulk and Link Services:

- Access to this development will be provided through the existing off-ramp from the R568.
- Access Roads will be constructed in co-operation with other developers and design of these will accommodate existing township as well as future developments.
- Internal Streets will be designed according to existing Design Standards and pavement designs will utilize in-situ materials as well as imported material from commercial sources.
- Stormwater can be safely routed within the development on roads and within sub-surface systems. The natural fall of the stand is to the exiting watercourse located to the west of the stand to where the stormwater will be drained.
- The provision of water will be gained by tying into the existing bulk water infrastructure service the already developed Industrial Stands to the south of the proposed development.
- After liaising with the Dr. JS Moroka Local Municipality it was made clear that sufficient bulk water is available for this development.
- Sewage will be drained to the existing bulk sewer.

The normal activities of people living in this future township will not lead to soil, surface water or ground water pollution. Special measures will be taken in accommodating eco sensitive areas. Strict Health and Safety Regulations will be enforced as per the Health and Safety Act and associated regulations during construction. All fauna and flora outside the perimeter of this development shall be protected and will not be damaged. Special attention will be given to dust control during the construction stage as the site is situated adjacent to a national road.

6.4.3 Issue 3: Heritage Resources

South Africa's heritage resources comprise a wide range of sites, features, objects and beliefs. According to Section 27(18) of the National Heritage Resources Act (NHRA), No. 25 of 1999, no person may destroy, damage, deface, excavate, alter, remove from its original position, subdivide or change the planning status of any heritage site without a permit issued by the heritage resources authority responsible for the protection of such site. In accordance with Section 38 of the NHRA, an independent heritage consultant was therefore to conduct a Heritage Impact Assessment (HIA) to determine if any sites, features or objects of cultural heritage significance occur within the proposed site. The main question which needs to be addressed is:

> "Will the proposed development impact on any heritage or archaeological artefacts?".

The Heritage Impact Assessment (Refer to Appendix H3) confirmed the following: The aim of this survey was to locate, identify, evaluate and document sites, objects and structures of cultural significance found within the areas of the proposed development, to assess the significance thereof and to consider alternatives and plans for the mitigation of any adverse impacts. The cultural landscape qualities of the region are made up of a pre-colonial element consisting of Stone Age and Iron Age occupation, as well as a much later colonial (farmer) component, which gave rise to an urban and industrial component. No features or objects of cultural significance have been identified on the site. There would be no impact as a result of the proposed development.

Therefore, from a heritage point of view it is recommended that the proposed development continue on condition that if archaeological sites or graves are exposed during development activities, it should immediately be reported to a heritage consultant so that an investigation and evaluation of the finds can be made.

6.4.4 Issue 4: Traffic Impacts

Township establishments are normally associated with an increase in construction vehicle traffic. The main question which needs to be addressed is:

> "How will the proposed development impact on the traffic on routes to the site?"

According to the Traffic Impact Assessment (Appendix H4) low peak hour traffic volumes are currently present on the road network and acceptable operating conditions prevail along the critical surrounding intersections. No road improvements are required on the road network to cater for the existing traffic volumes or expected growth in background traffic. The development is expected to generate a maximum of 853 additional peak hour trips during the weekday AM peak hour (400 trips inbound and 453 trips outbound) and 645 trips during the weekday PM peak hour (327 trips inbound and 318 trips outbound). Considering the additional development traffic, road improvements will be required at the intersection along the R568 which will provide access to the township. The area surrounding the proposed township is characterised by low vehicle ownership. Public transport and non-motorised transport facilities will be required.

6.5 METHOD OF ENVIRONMENTAL ASSESSMENT

The environmental assessment aims to identify the various possible environmental impacts that could results from the proposed activity. Different impacts need to be evaluated in terms of its significance and in doing so highlight the most critical issues to be addressed.

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in Table 6.4.

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.

6.5.1 Impact Rating System

Impact assessment must take account of the nature, scale and duration of impacts on the environment whether such impacts are positive or negative. Each impact is also assessed according to the project phases:

- planning
- construction
- operation
- decommissioning

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance should also be included. The rating system is applied to the potential impacts on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each impact the following criteria is used:

Table 6.4 The rating system

NATURE
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.
GEOGRAPHICAL EXTENT

This is defined as the area over which the impact will be experienced.		
1	Site	The impact will only affect the site.
2	Local/district	Will affect the local area or district.
3	Province/region	Will affect the entire province or region.
4	International and National	Will affect the entire country.
PROBABILITY		
This describes the chance of occurrence of an impact.		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
DURATION		
This describes the duration of the impacts. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact will either disappear with mitigation or will be mitigated through natural processes in a span shorter than the construction phase (0 – 1 years), or the impact will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects 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 (10 – 30 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered indefinite.
INTENSITY/ MAGNITUDE		
Describes the severity of an impact.		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired. Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
REVERSIBILITY		
This describes the degree to which an impact can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures.
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.

3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts. A cumulative impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible cumulative impact	The impact would result in negligible to no cumulative effects.
2	Low cumulative impact	The impact would result in insignificant cumulative effects.
3	Medium cumulative impact	The impact would result in minor cumulative effects.
4	High cumulative impact	The impact would result in significant cumulative effects
SIGNIFICANCE		
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 calculation of the significance of an impact uses the following formula: (Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity. The summation of the different criteria will produce a non-weighted value. By multiplying		

this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.		
Points	Impact significance rating	Description
6 to 28	Negative low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
29 to 50	Positive medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative high impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive high impact	The anticipated impact will have significant positive effects.
74 to 96	Negative very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive very high impact	The anticipated impact will have highly significant positive effects.

6.6 CONSIDERATION OF CUMULATIVE IMPACTS

Section 2 of the NEMA requires the consideration of cumulative impacts as part of any environmental assessment process. The EIA Regulations (2014) determine that cumulative impacts, *"in relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities*". Cumulative impacts can be incremental, interactive, sequential or synergistic. EIAs have traditionally failed to come to terms with such impacts, largely as a result of the following considerations:

- Cumulative effects may be local, regional or global in scale and dealing with such impacts requires coordinated institutional arrangements;

- Complexity - dependent on numerous fluctuating influencing factors which may be completely independent of the controllable actions of the proponent or communities; and

- Project level investigations are ill-equipped to deal with broader biophysical, social and economic considerations.

Despite these challenges, cumulative impacts have been afforded increased attention in this EIR and for each impact a separate section has been added which discusses any cumulative issues, and where applicable, draws attention to other issues that may contextualise or add value to the interpretation of the impact. Finally, comment is provided on the potential cumulative impacts which could result should this development, and others like it in the area, be approved.

7 ENVIRONMENTAL IMPACT STATEMENT

This section aims to address the following requirements of the regulations:

Appendix 3. (3) An EIR (...) must include-

(l) an environmental impact statement which contains-

(i) a summary of the key findings of the environmental impact assessment:

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

(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

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

7.1 SUMMARY OF KEY FINDINGS AND ASSESSMENT RESULTS

Based on the contents of the report the following key environmental issues were identified, which were addressed in this EIA report:

- Impacts during the construction phase.
    - Geology: Stability of excavations (-Low)
    - The provision of services (Generation of waste) (- Low)
    - Temporary employment opportunities (+ Medium)
- Impacts during the operational phase, which include:
    - Pressure on existing service infrastructure

- Potential health and safety impacts (- Low)
- Increase in traffic (- Low)
- Provision of quality housing (+ Medium)

7.2 DESCRIPTION OF UNCERTAINTIES AND GAPS IN KNOWLEDGE

The uncertainties in results are mostly related to the availability of information, time available to gather the relevant information as well as the sometimes-subjective nature of the assessment methodology. In terms of addressing the key issues the EAP is satisfied that there are no major gaps in knowledge and that the specialist reports provide sufficient information to conduct the significance rating and provide the environmental authority with sufficient information to make an informed decision.

7.3 RECOMMENDATION OF EAP

The final recommendation by the EAP considered firstly if the legal requirements for the EIA process had been met and secondly the validity and reliability of the substance of the information contained in the EIA report. In terms of the legal requirements it is concluded that:

- The scoping phase complied with the agreement and specification set out in Regulation 21 and Appendix 2 of the 2014 EIA Regulations – already approved by the environmental authority.
- All key consultees have been consulted as required by Chapter 6 of the 2014 EIA Regulations - already approved by the environmental authority.
- The EIA process has been conducted as required by the 2014 EIA Regulations, Regulations 23 and Appendix 3.
- The EMPr has been compiled in accordance with Appendix 4 of the 2014 EIA Regulations.
- The proposed mitigation measures will be sufficient to mitigate the identified impacts to an acceptable level.
- No additional specialist studies are proposed on any environmental issue raised and thus, no terms of reference are provided for such studies.

In terms of the contents and substance of the EIA report the EAP is confident that:

- All key environmental issues were identified during the scoping phase.

- These key issues were adequately assessed during the EIA phase to provide the environmental authority with sufficient information to allow them to make an informed decision.

The final recommendation of the EAP is that:

It is the opinion of the independent EAP that the proposed development will have a net positive impact for the area and will subsequently ensure the optimal utilisation of resources. All negative environmental impacts can further be effectively mitigated through the proposed mitigation measures. Based on the contents of the report it is proposed that an environmental authorisation be issued, which states (amongst other general conditions) that the township on a Portion of Portion 48 of the farm Valschfontein No. 33, Registration Division JS, Mpumalanga province be approved subject to the following conditions:

- Implementation of the proposed mitigation measures set out in the EMPr.
- Implementation of the proposed mitigation measures set out in the specialist studies.
- The proposed township establishment must comply with all relevant national environmental laws and regulations.

We trust that the department find the report in order and eagerly await your final decision in this regard.

Mrs. Marelie Botha
Environamics - Environmental Consultants

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