PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW COST HOUSING DEVELOPMENT ON PORTION 30 OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE

DRAFT ENVIRONMENTAL SCOPING REPORT
AND PLAN OF STUDY

AUGUST 2020

KAI !GARIB LOCAL MUNICIPALITY

PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW COST HOUSING DEVELOPMENT ON PORTION 30 OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE

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ACRONYMS

BGIS	Biodiversity Geographic Information System
CBA	Critical Biodiversity Area
DEA	Department of Environmental Affairs
DENC	Department of Environment and Nature Conservation
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NHRA	National Heritage Resources Act (Act No. 25 of 1999)
NID	Notice of Intent to Develop
NWA	National Water Act
OESA	Other Ecological Support Area
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
WULA	Water Use Licence Application

1. INTRODUCTION

1.1 BACKGROUND

Consideration is being given to the development of a new township, consisting of low-income housing, at Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape.

The applicant is Kai !Garib Local Municipality who will undertake the activity should it be approved. EnviroAfrica CC has been appointed as the independent Environmental Assessment Practitioner ("EAP") responsible for undertaking the relevant Environmental Impact Assessment ("EIA") and the Public Participation Process ("PPP") required in terms of the National Environmental Management Act (Act 107 of 1998) ("NEMA").

This Scoping Report, which will be submitted to the Department of Environment and Nature Conservation ("DE&NC") for consideration, forms part of the EIA process.

The purpose of this Draft Environmental Scoping Report is to describe the proposed project, the process followed to date, to present alternatives and to list issues identified for further study and comment by specialists.

Should the EIA process be authorised by DE&NC, the Specialist Studies (noted in Section 8) will be undertaken and the significant issues (noted in Section 6) will be investigated and assessed during the next phase of this application.

1.2 DESCRIPTION OF THE PROPOSED ACTIVITY

Kai !Garib Municipality is proposing to formalise and develop low cost housing in the Blaauwskop Settlement community located within Kai !Garib Local Municipality. The development proposal will have a development footprint of approximately 50 Ha and will be rezoned and subdivided into approximately 500 Erven, mainly for residential purposes.

The study area are as follows:

- Portion 30 of Farm Blaauwskop No. 36 (Please see Appendix 1J for the Title Deed).

The project entails the formalisation of approximately 500 Erven for the community Blaauwskop Settlement and the current zoning of the site is Agricultural Zone I. A Spatial Planning Land Use Application ("SPLUMA") application will be submitted after this EIA application for the rezoning and subdivision of land, and the rezoning to various land uses including public streets and any other land uses needed for the community of Blaauwskop Settlement. The project includes the associated infrastructure such as water, electricity, sewage, and solid waste removal. The total area to be developed measures 50 (fifty) hectares.

The site is located in Blaauwskop Settlement, in the Kai !Garib Municipality, Northern Cape. Please refer to **Appendix 1I** for the site co-ordinates.

2. NEED AND DESIRABILITY

In terms of the National Environmental Management Act, as amended, EIA 2014 regulations (as amended) the Scoping/EIA report must provide a description of the need and desirability of the proposed activity. The consideration of "need and desirability" in EIA decision-making requires the consideration of the strategic context of the development proposal along with the broader societal needs and the public interest.

While the concept of need and desirability relates to the *type* of development being proposed, essentially, the concept of need and desirability can be explained in terms of the general meaning of its two components in which *need* refers to *time* and *desirability* to *place* – i.e. is this the right time and is it the right place for locating the type of land-use/activity being proposed? Need and desirability can be equated to *wise use of land* – i.e. the question of what is the most sustainable use of land.

2.1 NEED

Housing is a national need, including in the Kai Garib Local Municipality.

According to the Kai Garib Municipality, the proposed development represents a significant step towards service delivery and housing objectives within the municipality and broader Kimberley area. As such, this initiative is a positive step towards better governance and service delivery and will benefit the broader Kimberley community. Furthermore, this development will not only meet the pressing needs of adequate housing within the municipality but will also be in line to support of the municipal IDP objectives to provide housing for the poor and decrease the city's housing backlog as well as fulfil the Constitutional mandate to provide adequate housing and basic services to citizens.

According to the Kai Garib Municipality's Integrated Development Plan (IDP 2017 – 2018), … *the municipality has indicated that there is a pressing need for houses, especially low cost houses, as well as serviced plots within all of the communities within the Kai !Garib area. However, it is quite satisfying to see that a great deal of progress was made in the delivering brick houses to communities since 1994. Unfortunately, the communities need for houses exceed the speed at which houses are built on individual erven.*

According to the Census 2011 (Stats SA) 88.4 % of the population live in formal dwellings and 43.1 % households live in houses which they own and have fully paid off. However, according to service delivery data from the Municipality, the number of informal settlements is growing overnight and the demand for service provision in these areas pose great challenges.

Table 14.6: Housing Demand

WARDS	1	2	3	4	5	6	7	8	9	TOTAL
NEEDS BASED ON LAND USE SURVEY AND OUTSTANDING PROJECTS										
Informal Structures on Stands	138	39	50	0	93	0	17	0	0	337
Informal Structures in backyards & landless	83	8	185	0	62	0	54	0	2	394
LAND NEEDED										
Land needed in ha for landless and backyard dwellings (Stand size 400m²)	4.742	0.457	10.571	0	3.542	0	3.085	0	0.114	22.838ha
ADDITIONAL HOUSEHOLDS, PLANNED PROJECTS AND LAND NEEDS										
Expected additional households 2014-2019	153	95	102	84	78	86	65	89	83	835
Expected land needs (ha) based on 5 year growth (Stand size 400m²)	8.742	5.428	5.828	4.80	4.457	4.914	3.714	5.085	4.742	47.71ha
PREFFERED HOUSING PROGRAMMES in %										
Fully subsidised (low cost/rental/ Informal Settlements Upgrading Programme	10 112	7572	7984	5611	4423	6988	4447	5163	5669	57 969
Institutional/GAP/FLISP Housing/People's Housing	167	166	316	179	302	242	111	132	256	1 871
Bonded housing	1129	453	1217	585	774	455	298	256	754	5 921

Source: Kai !Garib Local Municipality, 2015

Figure 1: Kai !Garib Municipality IDP 2017 – 2018 - Housing Demand

2.2 DESIRABILITY

The following factors determine the desirability of the area for the proposed development.

2.2.1 Location and Accessibility

The proposed location is considered to be a viable option. The proposed site is located to the east of the R365 Road in Blaauwskop Settlement and is allowing for accessibility and linking to the existing services infrastructure. Any upgrades or additional services infrastructure that will be required will be investigated and included in the Environmental Impact Report (EIR).

The desirability and location of the proposed development will be further investigated in the EIR.

2.2.2 Compatibility with the Surrounding Area

The proposed site is located within the agricultural area of Blaauwskop Settlement and is surrounded by agricultural land uses. The area on which the site is located is in a degraded state, was previously used for livestock grazing and some informal dwellings are present on site which needs to be formalised as part of this EIA application. The Orange River is located approximately 750m west of the site and the R359 Road is located approximately 400m west of the site. As stated above, the site would provide accessibility and allow the proposed development to link to the existing services infrastructure.

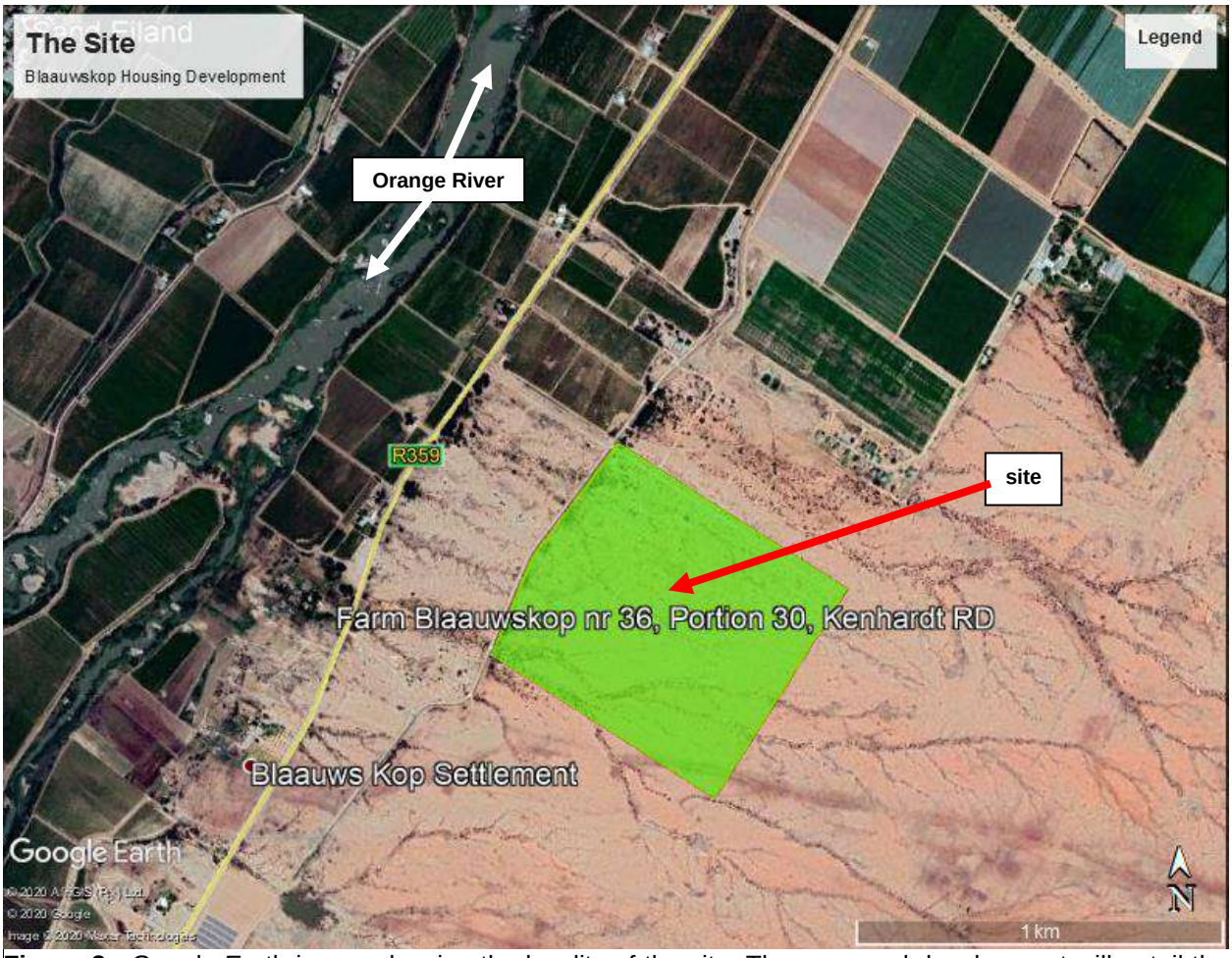

Figure 2: Google Earth image showing the locality of the site. The proposed development will entail the formalisation of informal dwellings located on site. The Orange River is located approximately 750m west of the site and the R359 Road is located approximately 400m west of the site.

3. LEGAL REQUIREMENTS

The current assessment is being undertaken in terms of the National Environmental Management Act (Act 107 of 1998, NEMA) ("NEMA"), to be read with section 24 (5): NEMA Environmental Impact Assessment ("EIA") Regulations 2014, as amended. However, the provisions of various other Acts must also be considered within this EIA.

The legislation that is relevant to this study is briefly outlined below.

3.1 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

The Constitution of the Republic of South Africa (Act 108 of 1996) states that everyone has a right to a non-threatening environment and that reasonable measure are applied to protect the environment. This includes preventing pollution and promoting conservation and environmentally sustainable development, while promoting justifiable social and economic development.

3.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)

The National Environmental Management Act (Act 107 of 1998) ("NEMA"), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the relevant authorities based on the findings of an environmental assessment. NEMA is a national act, which is enforced by the Department of Environmental Affairs (DEA). These powers are delegated in the Northern Cape to the Department of Environment and Nature Conservation (DE&NC).

On the 04 December 2014 the Minister of Water and Environmental Affairs promulgated regulations in terms of Chapter 5 of the NEMA, namely the EIA Regulations 2014. These were amended on 07 April 2017 (GN No. 326, No. 327 (Listing Notice 1), No. 325 (Listing Notice 2), No. 324 (Listing Notice 3) in Government Gazette No. 40772 of 07 April 2017). Listing Notice 1 and 3 are for a Basic Assessment and Listing Notice 2 for a full Environmental Impact Assessment (EIA).

According to the regulations of Section 24(5) of NEMA, authorisation is required for the following listed activities for the proposed housing development:

<u>Government Notice R327 (Listing Notice 1) listed activities:</u>

9 The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water;

(i) with an internal diameter of 0,36 metres or more; or

(ii) with a peak throughput of 120 litres per second or more;

excluding where;
a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or
b) where such development will occur within an urban area.

10 The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes
(i) with an internal diameter of 0,36 metres or more; or
(ii) with a peak throughput of 120 litres per second or more;

excluding where;
a) such infrastructure is for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes inside a road reserve or railway line reserve; or
b) where such development will occur within an urban area.

12 The development of;
(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres;
(ii) infrastructure or structures with a physical footprint of 100 square metres or more;

where such development occurs;
(a) within a watercourse;
(b) in front of a development setback; or
(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;

19 The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;
(a) will occur behind a development setback;
(b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or
(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.

24 The development of a road -
(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or
(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;

but excluding a road—
(a) which is identified and included in activity 27 in Listing Notice 2 of 2014;
(b) where the entire road falls within an urban area; or
(c) which is 1 kilometre or shorter**.**

28 Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes 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; or

(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;

excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.

Government Notice **R325** (Listing notice 2) listed activities:

15 The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for;
(i) the undertaking of a linear activity; or
(ii) maintenance purposes undertaken in accordance with a maintenance management plan.

Government Notice **R324** (Listing notice 3) listed activities:

4 The development of a road wider than 4 metres with a reserve less than 13.5 metres

12 The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.

g. Northern Cape
i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;
ii. Within critical biodiversity areas identified in bioregional plans;
iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuary, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or
iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.

14 The development of;
(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 10 square metres;
(ii) infrastructure or structures with a physical footprint of 10 square metres or more;

where such development occurs;
(a) within a watercourse;
(b) in front of a development setback; or
(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;
Excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;

An Application Form will be submitted to DE&NC. On acknowledgment from DE&NC this Scoping Process is being undertaken to identify potential issues.

The principles of environmental management as set out in section 2 of NEMA have been taken into account. The principles pertinent to this activity include:

- People and their needs will be placed at the forefront while serving their physical, psychological, developmental, cultural and social interests. The activity seeks to provide additional employment and economic development opportunities, which are a local and national need – *the proposed activity is expected to have a beneficial impact on people, especially developmental and social benefits, as well providing additional employment and economic development opportunities.*

- Development will be socially, environmentally and economically sustainable. Where disturbance of ecosystems, loss of biodiversity, pollution and degradation, and landscapes and sites that constitute the nation's cultural heritage cannot be avoided, are minimised and remedied. The impact that the activity will potentially have on these will be considered, and mitigation measures will be put in place - *potential impacts have been identified and considered, and any further potential impacts will be identified during the public participation process. Mitigation measures will be included in the Environmental Management Programme ("EMPr")*.
- Where waste cannot be avoided, it will be minimised and remedied through the implementation and adherence of the EMPr – *this will be included in the EIR*.
- The use of non-renewable natural resources will be responsible and equitable.
- The negative impacts on the environment and on people's environmental rights will be anticipated, investigated and prevented, and where they cannot be prevented, will be minimised and remedied.
- The interests, needs and values of all interested and affected parties will be taken into account in any decisions through the Public Participation Process (PPP).
- The social, economic and environmental impacts of the activity will be considered, assessed and evaluated, including the disadvantages and benefits.
- The effects of decisions on all aspects of the environment and all people in the environment will be taken into account, by pursuing what is considered the best practicable environmental option.

3.3 NATIONAL HERITAGE RESOURCES ACT

The protection and management of South Africa's heritage resources are controlled by the National Heritage Resources Act (Act No. 25 of 1999). South African National Heritage Resources Agency ("SAHRA") is the enforcing authority.

In terms of Section 38 of the National Heritage Resources Act, SAHRA will require a Heritage Impact Assessment (HIA) where certain categories of development are proposed. Section 38(8) also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is found to be adequate, a separate HIA is not required.

The National Heritage Resources Act requires relevant authorities to be notified regarding this proposed development, as the following activities are relevant:

- *any development or other activity which will change the character of a site exceeding 5 000 m² in extent;*
- *the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length*

Furthermore, in terms of Section 34(1), no person may alter or demolish any structure or part of a structure, which is older than 60 years without a permit issued by the SAHRA, or the responsible resources authority. Nor may anyone destroy, damage, alter, exhume or remove from its original position, or otherwise disturb, any grave or burial ground older than 60 years, which is situated outside a formal cemetery administered by a local authority, without a permit issued by the SAHRA, or a provincial heritage authority, in terms of Section 36 (3). In terms of Section 35 (4), no person may destroy, damage, excavate, alter or remove from its original position, or collect, any archaeological material or object, without a permit issued by the SAHRA, or the responsible resources authority.

3.4 EIA GUIDELINE AND INFORMATION DOCUMENT SERIES

The following are the latest guidelines and information Documents that have been consulted:

- Department of Environmental Affairs and Development Planning's (DEA&DP) *Environmental Impact Assessment Guideline and Information Document Series (Dated: March 2013)*:
  - ✓ *Guideline on Transitional Arrangements*
  - ✓ *Generic Terms of Reference for EAPs and Project Schedules*
  - ✓ *Guideline on Alternatives*
  - ✓ *Guideline on Public Participation*
  - ✓ *Guideline on Exemption Applications*
  - ✓ *Guideline on Appeals*
  - ✓ *Guideline on Need and Desirability*

- Department of Environmental Affairs and Tourism (DEAT*) Integrated Environmental Management Information Series*

3.5 NATIONAL WATER ACT

Besides the provisions of NEMA for this EIA process, the proposed development may also require authorizations under the National Water Act (Act N0. 36 of 1998). The Department of Water and Sanitation (DWS), who administer that Act, will be a leading role-player in the EIA.

If, and as required by the DWS, a Water Use Licence Application (WULA) may be compiled and submitted.

3.6 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT

The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is part of a suite of legislation falling under NEMA, which includes the Protected Areas Act, the Air Quality Act, the Integrated Coastal Management Act and the Waste Act. Chapter 4 of NEMBA deals with threatened and protected ecosystems and species and related threatened processes and restricted activities. The need to protect listed ecosystems is addressed (*Section 54*).

3.7 THE SPATIAL PLANNING AND LAND USE MANAGEMENT ACT (ACT 16 OF 2013)

The subject area falls under the jurisdiction of Kai !Garib local municipality and the appropriate zoning and subdivision would need to be allocated in order to permit the development of the land for the intended purpose. The Spatial Planning Land Use Management Application (SPLUMA) application will be submitted once this EIA process has been completed.

4. ALTERNATIVES

Alternatives to the proposed development are very limited and have therefore not been considered for the following reasons described below.

4.1 SITE ALTERNATIVES

The proposed site is the only viable site available at this stage and the only one that will be investigated in this application. Housing is a constant need in the municipality, with other sites possibly earmarked for residential development that will not form part of this application. These will be addressed in the Environmental Impact Report phase.

4.2 ACTIVITY ALTERNATIVES

Activity alternatives are also very limited with no feasible alternatives besides residential development to assess. Due to the need for housing in the Kai !Garib Local Municipality, the housing development and associated infrastructure on the property is therefore the only activity considered.

The development may include a number of different land-uses however, besides just residential opportunities. These will be investigated during the Environmental Impact Report phase.

4.3 LAYOUT ALTERNATIVES

Various layout alternatives will be investigated during the Environmental Impact Report phase. These will be compiled with input from the municipality and its requirements, Engineers, as well as input and/or recommendations of the various specialists, as well as input from Interested and Affected Parties, including the community members. Please refer to **Appendix 1A** for the Concept Layout Plan.

4.4 NO-GO ALTERNATIVE

This is the option of not developing the proposed residential development.

Although the no-go development might result in no potential negative environmental impacts, the direct and indirect socio-economic benefits of not constructing the residential development will not be realised. The need for additional housing opportunities in the Kai !Garib Local Municipality will not be realised. These potential negative and/or positive environmental impacts will be assessed in the Environmental Impact Report.

5. SITE DESCRIPTION

5.1 LOCATION

The proposed site is located along Gordonia Road, adjacent to the existing residential area in Gamakor, Keimoes. The proposed site is located 30 km to the south-west of Upington, as the crow flies, and 13 km east of Keimoes, on the southern bank of the Orange River, in the Northern Cape. Please refer to **Appendix 1L** for the site photographs, **Appendix 1I** for the site co-ordinates and see **figures 3** to **8** below.

The study area is as follows:

- Portion 30 of Farm Blaauwskop No. 36 (Please see **Appendix 1J** for the Title Deed).

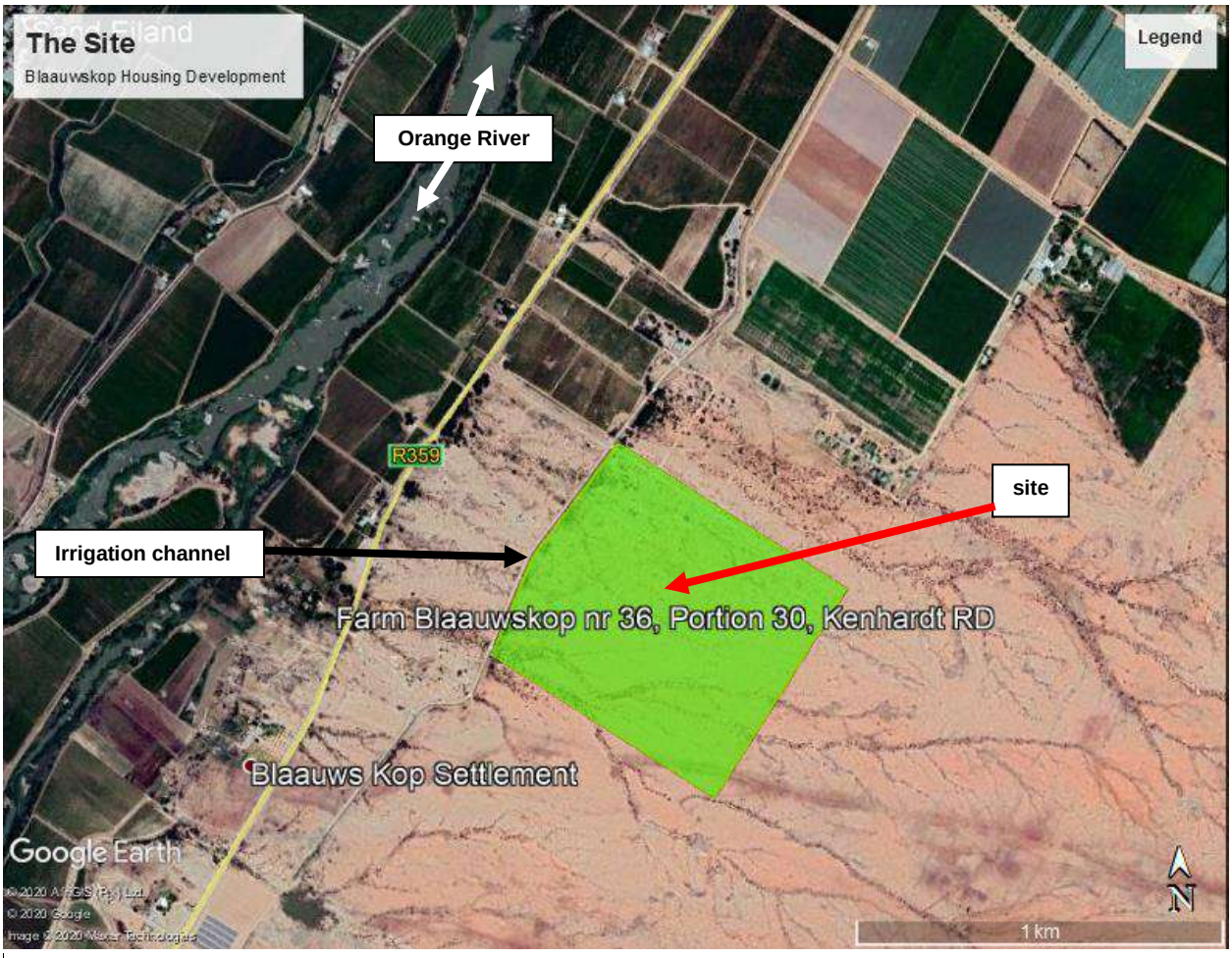

Figure 3: Google Earth Aerial image of the proposed site (green polygon) and surrounding area.

Figure 4: General view of the informal dwellings on site, looking in a south-eastern direction. The site is transformed.

Figure 5: General view of the informal dwellings on site. The site comprises of informal dwellings with access roads.

Figure 6: General view of the informal dwellings on site; looking in a south-eastern direction. The site is transformed. A number of alien trees are present on site.

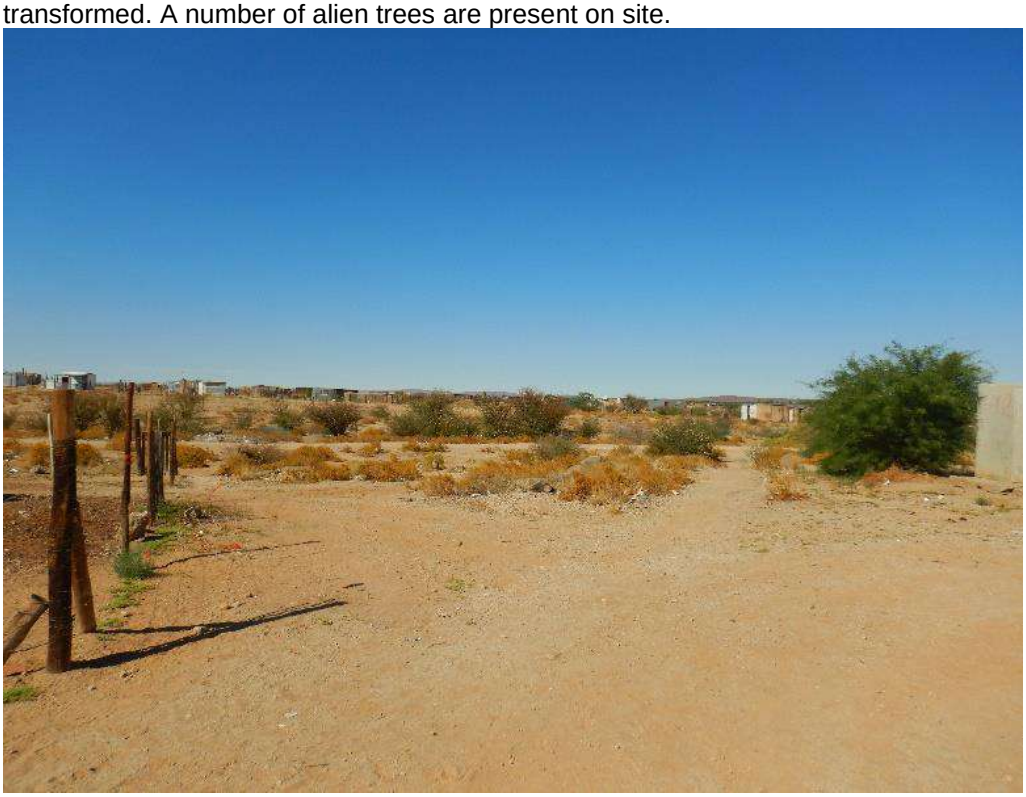

Figure 7: General view of the informal dwellings on site, looking in a southern direction. A number of alien trees are found on site.

Figure 8: General view of the informal dwellings on site, looking in a north-eastern direction. The site is transformed and degraded.

5.2 VEGETATION

The proposed site for the residential development is partly developed and has some natural vegetation present. According to the Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006, as updated in the 2012 beta version) the vegetation type is expected to be Bushmanland Arid Grassland (see figure 9 below). Bushmanland Arid Grassland is not considered a threatened vegetation type, with more than 99% remaining. However only 4% is formally conserved (Augrabies Falls National Park). According to the 2016 Northern Cape CBA map, the proposed development footprint is located within a Critical Biodiversity Area (CBA). Unfortunately, there are no logical alternative sites available to the Kai !Garib Municipality, which will not impact on the CBA (see figure 10). Please note that a Botanical Impact Assessment will be undertaken and will form part of the Draft Environmental Impact Report phase.

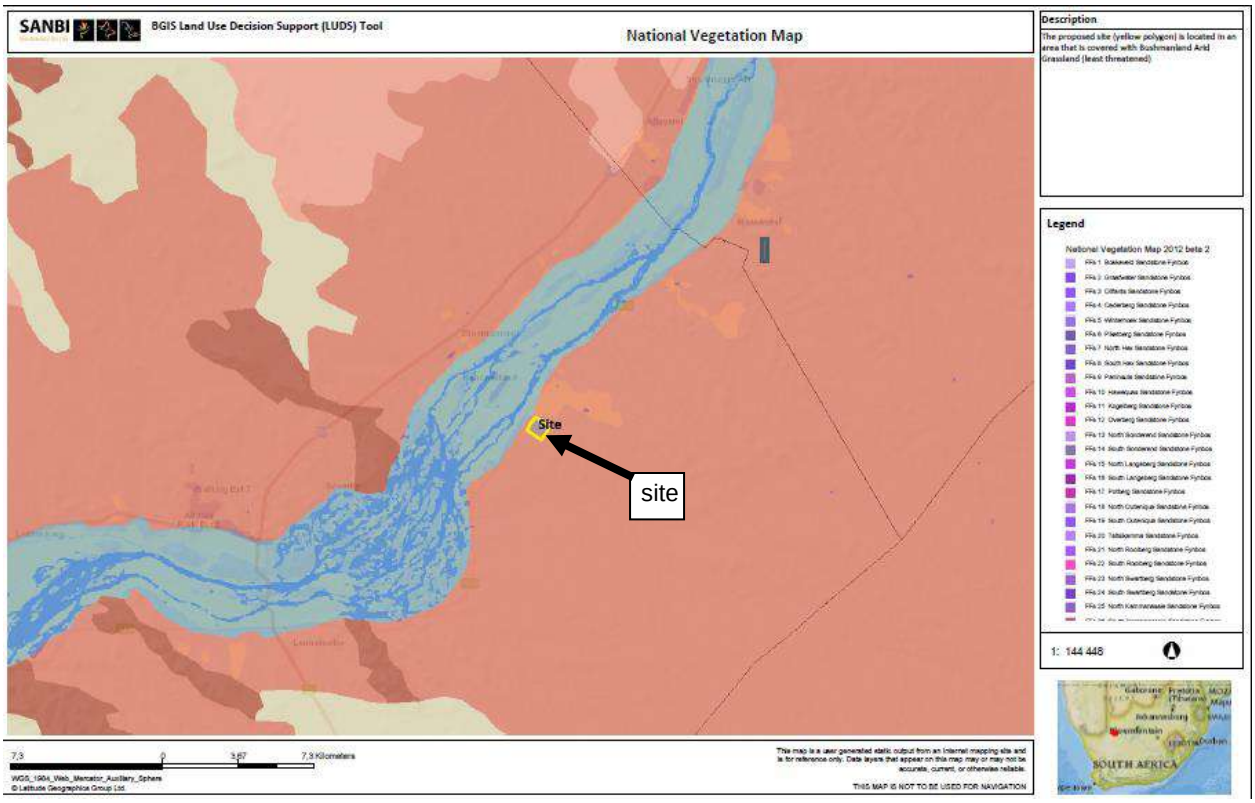

Figure 9: SANBI BGIS Vegetation map of the area.

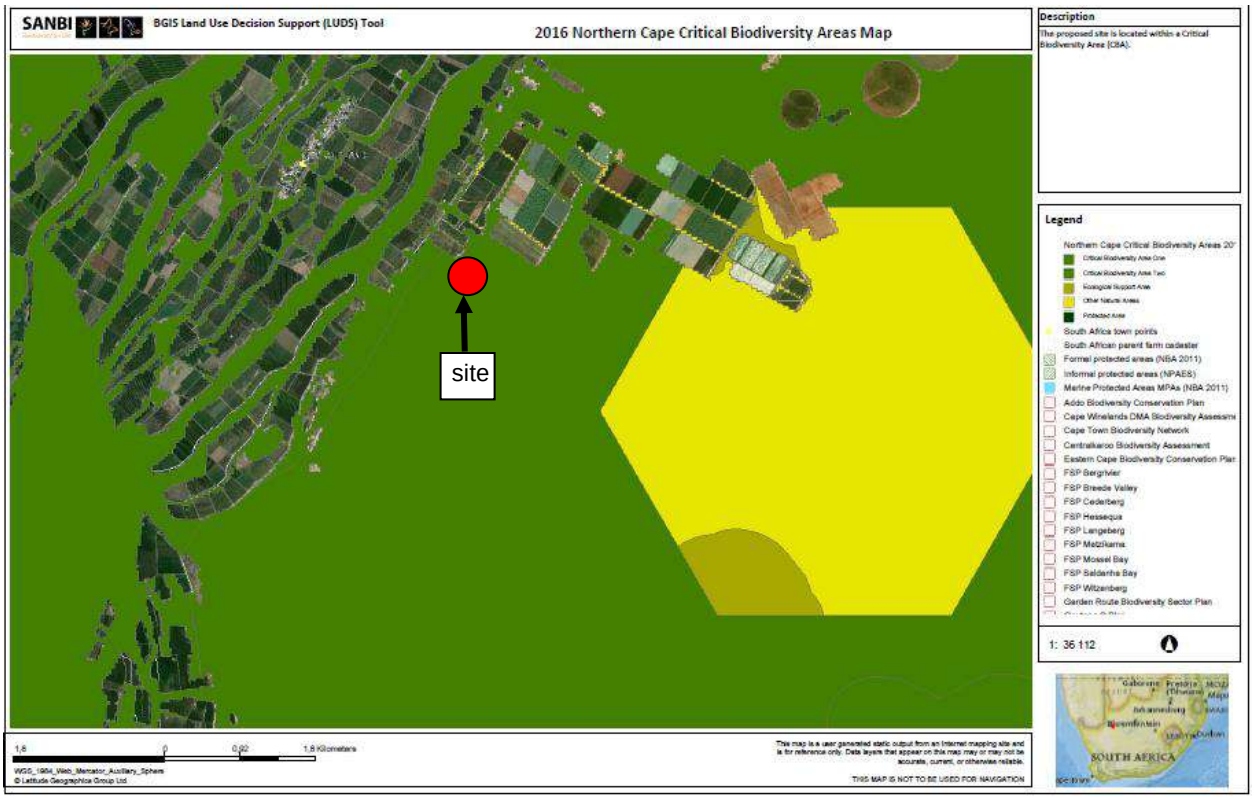

Figure 10: SANBI BGIS - 2016 Northern Cape Critical Biodiversity Areas Map.

5.3 FRESHWATER

From the SANBI National Freshwater Ecosystem Priority Areas ("NFEPA") map (see Figure 11 below), there are no natural watercourses on the proposed site. The Orange River is located approximately 750m west of the site and Kareeboom River is 2500m south of the proposed site. There is an irrigation channel to the west of the proposed site. However, from the site visit and Google earth images, and the Freshwater Report (**Appendix 1G**), the proposed housing development transverses a number of drainage lines. According to the Freshwater Report (attached as **Appendix 1G**), the proposed housing development will entirely alter the drainage lines. Please refer to **Appendix 1G** and figures **11** to **12** below.

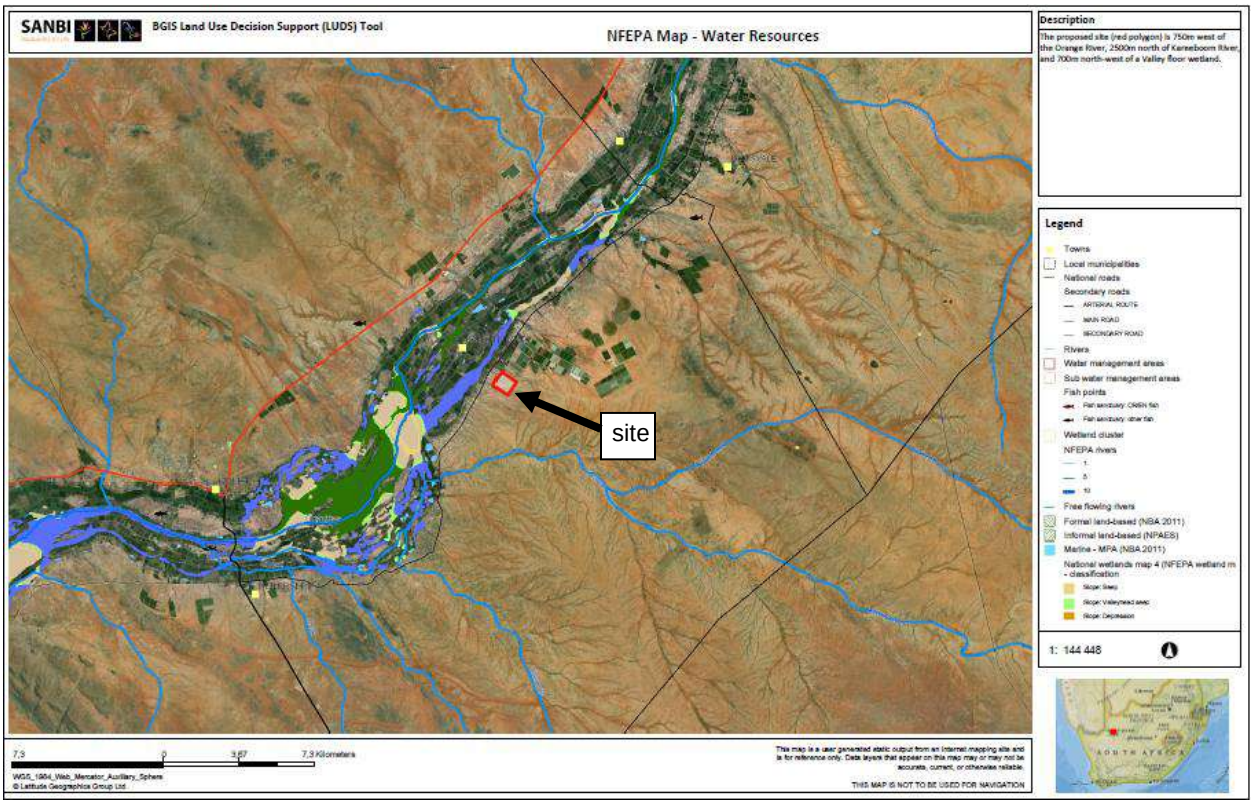

Figure 11: SANBI BGIS NFEPA map of the area.

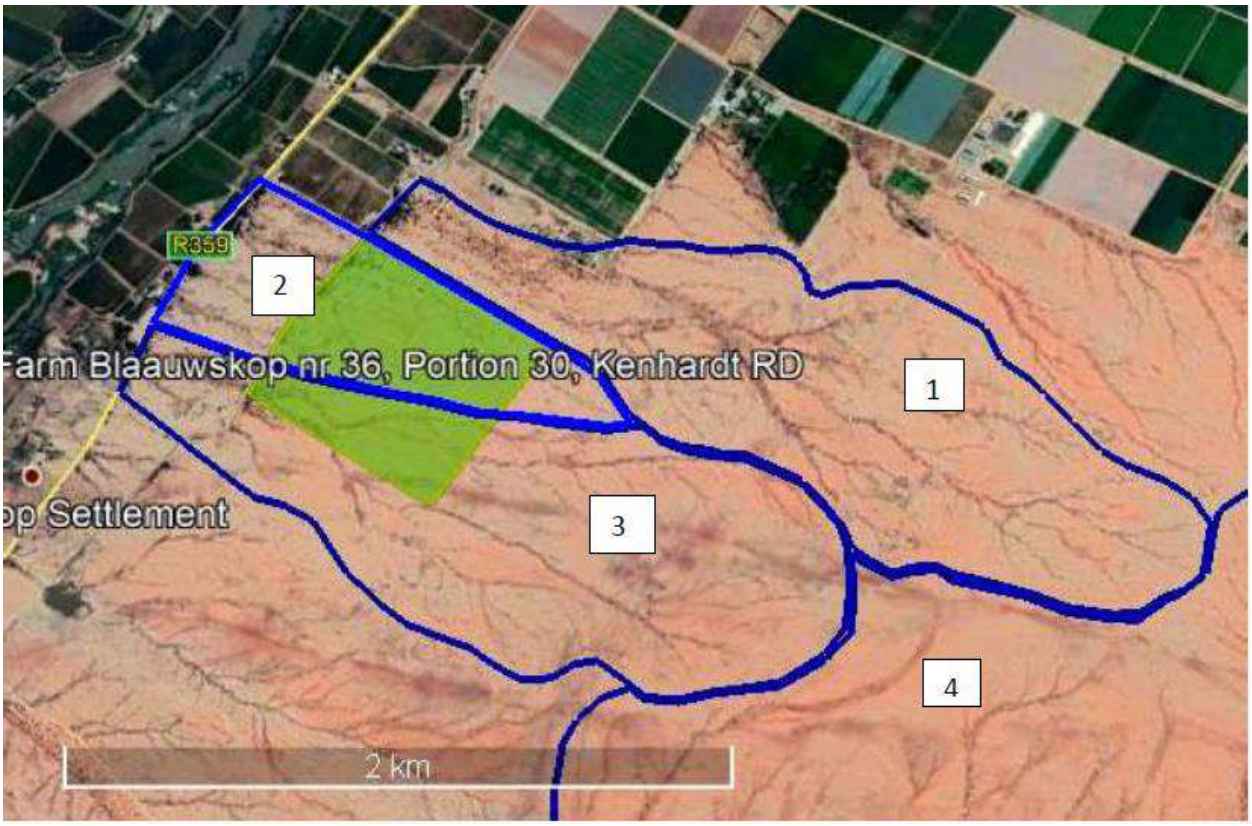

Figure 12: Catchment areas (see Appendix 1G).

The drainage lines are mostly dry, with water only during rains and perhaps shortly thereafter. During the odd thunder storm, drainage lines can come down in flood. These floods maintain the drainage line's morphological integrity, as sediments are moved and these water ways are scoured out. Because rainfall events are far apart, the drainage lines must have been form over millennia, even since geological times (see **Appendix 1G**). Around the Orange River and even the Sak and Hartbees River, large-scale agriculture has changed the drainage lines into drainage channels among the vineyards and orchards. The upper reaches away from the rivers are less impacted, even near-pristine, as intense agriculture is not possible, apart from those areas where water is piped over long distances from the Orange River (see **Appendix 1G**).

The mostly dry drainage lines in sub-catchment 2 and 3 run right through the existing housing, with houses located on the banks, without any buffer zone (see **Appendix 1G**). The drainage lines pass over the irrigation canal. Concrete slabs have been constructed over the canal at each of the crossings, with concrete walls on either side of the crossing to keep storm water from entering the canal (see Appendix 1G). The impacts on sub-catchments 2 and 3 are going to be the greatest, as the township will be built right over these drainage lines (see **Appendix 1G**). Drainage lines of sub-catchments 1 and 4 are adjacent to the new development and would be spared of houses right on its banks (see **Appendix 1G**).

The impacts include trampling and over-grazing of the sub-catchment, destruction of the drainage lines, littering and the danger of untreated sewage ending up in the drainage canal and the Orange River (see **Appendix 1G**).

Mitigation Measures

A buffer zone of 20m should be allowed on either side of these drainage lines, a green zone through the envisaged township. The township should be arranged in such a way that the drainage lines still connect to the stormwater infrastructure over the irrigation canal. Stormwater should not be allowed to enter the irrigation canal. Where necessary, additional infrastructure should be built over the irrigation canal.

Litter and household waste have been noted in the drainage lines of the existing township. This problem, if not properly managed, will escalate when the township expands. Litter and waste should not be allowed to enter the canal. It should not be allowed to wash down the drainage lines and into the Orange River. Infrastructure to catch the waste should be installed and these structures should be regularly cleaned.
Another 1500 households would put strain on the current sewage and wastewater handling system. It would be disastrous if sewage ends up in the Orange River. Proper planning and infrastructure are necessary.

The three smaller sub-catchments can probably not produce enough runoff, even during a large rainfall event, to pose a threat to the new development. The larger sub-catchment of almost 90 000 ha is large enough to produce a sudden and dangerous pulse of runoff during a high rainfall event, perhaps of 30 to 40mm in a day. Residents should be aware of the potential hazard.

The authorities will have to give the dangers of children in and around the irrigation canal some thought, because the danger of drownings increases as the township grows.

A General Authorisation is required from Department of Water and Sanitation ("**DWS**"). The impact of the proposed development on these watercourses are to be further investigated in the Environmental Impact Report phase.

5.4 CLIMATE

Keimoes, the closest locality to Blaauwskop with on-line climate data, receives only 154mm of rain annually, which leaves the area semi-arid. The rainfall is entirely inadequate for growing crops. The large scale agriculture in the district is for all its needs dependent on irrigation out of the Orange River. Most of the rain is during summer. Rainfall often occurs in late afternoon sudden and violent electric thunder storms. Rainfall is highly variable, with occasional high rainfall events, perhaps once in a couple of years. Droughts are common, with dry periods lasting for years. The summers are hot and dry, with midday temperatures often more than 40° centigrade.

5.5 SOCIO-ECONOMIC CONTEXT

According to the Kai !Garib Municipality Integrated Development Plan (IDP) (Final IDP 2019 – 2020), the municipal area falls within the ZF Mgcawu District Municipality's Area and consists of 3 large towns: Kakamas, Keimoes and Kenhardt. According to the municipality's Spatial Development Framework [SDF], adopted in October 2012, the Municipal area occupies 26 358km², the equivalent of 25.71% of the mentioned District Municipality and 2.16% of the whole of South Africa.

The population projection of Kai !Garib Local Municipality shows an estimated average annual growth rate of 0.9% between 2018 and 2023. The average annual growth rate in the population over the projection period for ZF Mgcawu District Municipality, Northern Cape Province and South Africa is 1.2%, 1.3% and 1.3% respectively. The Northern Cape Province is estimated to have an average growth rate of 1.3% which is very similar than that of the Kai !Garib Local Municipality. The South Africa as a whole is estimated to have an average annual growth rate of 1.3% which is very similar than that of Kai !Garib's projected growth rate (Kai !Garib Municipality IDP 2019 – 2020).

In 2018, the Kai !Garib Local Municipality's population consisted of 28.46% African (20 100), 7.00% White

(4 930), 63.32% Coloured (44 600) and 1.23% Asian (865) people. The largest share of population is within the young working age (25-44 years) age category with a total number of 24 200 or 34.4% of the total population. The age category with the second largest number of people is the babies and kids (0-14 years) age category with a total share of 21.3%, followed by the teenagers and youth (15-24 years) age category with 14 900 people. The age category with the least number of people is the retired / old age (65 years and older) age category with only 4 500 people is indicated by the statistics (Kai !Garib Municipality IDP 2019 – 2020).

With the Coloured population group representing 63.3%of the Kai !Garib Local Municipality's total population, the overall population pyramid for the region will mostly reflect that of the African population group. The chart below compares Kai !Garib's population structure of 2018 to that of South Africa.

- There is a significantly larger share of young working age people - aged 20 to 34 (32.8%) - in Kai !Garib, compared to the national picture (27.5%).
- The area appears to be a migrant receiving area, with many of people migrating into Kai !Garib, either from abroad, or from the more rural areas in the country looking for better opportunities.
- Fertility in Kai !Garib is significant lower compared to South Africa as a whole.
- Spatial policies changed since 1994.
- The share of children between the ages of 0 to 14 years is significant smaller (21.3%) in Kai !Garib compared to South Africa (29.0%). Demand for expenditure on schooling as percentage of total budget within Kai !Garib Local Municipality will therefore be lower than that of South Africa (Kai !Garib Municipality IDP 2019 – 2020).

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 2018, the Kai !Garib Local Municipality comprised of 18 400 households. This equates to an average annual growth rate of 0.24% in the number of households from 2008 to 2018. With an average annual growth rate of 0.87% in the total population, the average household size in the Kai !Garib Local Municipality is by implication increasing. This is confirmed by the data where the average household size in 2008 increased from approximately 3.6 individuals per household to 3.8 persons per household in 2018 (Kai !Garib Municipality IDP 2019 – 2020).

In 2018, there were 37 100 people living in poverty, using the upper poverty line definition, across Kai !Garib Local Municipality - this is 5.92% lower than the 39 400 in 2008. The percentage of people living in poverty has decreased from 59.57% in 2008 to 51.92% in 2018, which indicates a decrease of 7.65 percentage points (Kai !Garib Municipality IDP 2019 – 2020).

Within Kai !Garib Local Municipality, the number of people without any schooling decreased from 2008 to 2018 with an average annual rate of -3.17%, while the number of people within the 'matric only' category, increased from 6,420 to 8,920. The number of people with 'matric and a certificate/diploma' increased with an average annual rate of 1.35%, with the number of people with a 'matric and a Bachelor's' degree increasing with an average annual rate of 0.07%. Overall improvement in the level of education is visible with an increase in the number of people with 'matric' or higher education (Kai !Garib Municipality IDP 2019 – 2020).

The number of people without any schooling in Kai !Garib Local Municipality accounts for 29.53% of the number of people without schooling in the district municipality, 5.26% of the province and 0.15% of the national. In 2018, the number of people in Kai !Garib Local Municipality with a matric only was 8,920 which is a share of 20.33% of the district municipality's total number of people that has obtained a matric. The number of people with a matric and a Postgrad degree constitutes 15.53% of the district municipality, 2.59% of the province and 0.03% of the national (Kai !Garib Municipality IDP 2019 – 2020). A total of 42 800 individuals in Kai !Garib Local Municipality were considered functionally literate in 2018, while 13 400 people were considered to be illiterate. Expressed as a rate, this amounts to 76.11% of the population, which is an increase of 0.1 percentage points since 2008 (66.12%). The number of illiterate individuals decreased on average by -2.27% annually from 2008 to 2018, with the number of functional literate

people increasing at 2.63% annually (Kai !Garib Municipality IDP 2019 – 2020).

Kai !Garib Local Municipality's functional literacy rate of 76.11% in 2018 is lower than that of ZF Mgcawu at 79.67%, and is lower than the province rate of 78.61%. When comparing to National Total as whole, which has a functional literacy rate of 84.42%, it can be seen that the functional literacy rate is higher than that of the Kai !Garib Local Municipality (Kai !Garib Municipality IDP 2019 – 2020).

The agricultural sector is still the main economic sector who made the biggest contribution to the economy of Kai !Garib. The Agriculture sector is also a major employer in the Municipality in terms of all formal employment. It is also the sector with the largest potential for economic growth. The commercial farmers farm especially with grapes for export, raisins and wine, while citrus types of fruit are also becoming more prevalent in the area (Kai !Garib Municipality IDP 2019 – 2020).

The municipality has indicated that there is a pressing need for houses, especially low cost houses, as well as serviced plots within all of the communities within the Kai !Garib area. However, it is quite satisfying to see that a great deal of progress was made in the delivering brick houses to communities since 1994. Unfortunately, the communities need for houses exceed the speed at which houses are built on individual erven (Kai !Garib Municipality IDP 2019 – 2020). According to the Census 2011 (Stats SA) 88.4 % of the population live in formal dwellings and 43.1 % households live in houses which they own and have fully paid off. However, according to service delivery data from the Municipality, the number of informal settlements is growing overnight and the demand for service provision in these areas pose great challenges. When looking at the formal dwelling unit backlog (number of households not living in a formal dwelling) over time, it can be seen that in 2007 the number of households not living in a formal dwelling were 1 840 within Kai !Garib Local Municipality. From 2007 this number increased annually at 4.51% to 2 860 in 2017 (Kai !Garib Municipality IDP 2019 – 2020).

5.6 HERITAGE FEATURES

Due to the nature and size of the proposed development, potential heritage resources may be affected by the proposed development. Heritage resources include any of the following, as defined by the National Heritage Resources Act (Act 25 of 1999):

- living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- Ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; definition used in KwaZulu-Natal Heritage Act 2008);
- places, buildings, structures and equipment; places to which oral traditions are attached or which are associated with living heritage; historical settlements and townscapes;
- landscapes and natural features; geological sites of scientific or cultural importance;
- archaeological and palaeontological sites; graves and burial grounds;
- public monuments and memorials; sites of significance relating to the history of slavery in South Africa; movable objects, but excluding any object made by a living person; and battlefields.

A **Heritage Impact Assessment** ("**HIA**") was conducted and is attached to this report as **Appendix 1H**. The HIA identified the following heritage resources on site:

- Five occurrences of lithic material were recorded within the development footprint on Portion 30 of Farm Blaauwskop No. 36. The lithic assemblages consist of surface scatters of very few formal tools, predominantly untrimmed flakes, cores, stone working debris, and few scrapers made from the highly utilised banded ironstone formation (BIF).
- Three incidences of lithic material were recorded outside the development footprint, towards the south.
- No formal or informal graves were identified.

- The proposed site has zero palaeontological significance

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

- The lithic traces on the landscape of the study area are of low significance and the impact of the development on these resources are inconsequential. No other heritage was identified. Therefore, no further mitigation is required, and from a heritage point of view we recommend that the proposed development can continue.
- Due to the zero palaeontological significance of the area, no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area as the igneous rocks underlying the site are not fossiliferous. It is therefore recommended that the project be exempt from a full Paleontological Impact Assessment (Butler 2019).
- Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any possible discovery of finds such as stone tool scatters, artefacts, human remains, or fossils are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find.

The HIA (**Appendix 1H**) has identified no significant heritage resources on Farm Blaauwskop No. 36, Portion 30, Blaauwskop Settlement, Kai !Garib Municipality, Mgcawu District Municipality, Northern Cape as set out in the report. In the development footprint there are no archaeological, historical or cultural sites, or paleontological resources that will be impacted on negatively by the proposed development.

Due to the scale of the development and the level of development that is occurring within Keimoes, the availability of bulk services for the development will need to be investigated. The Kai !Garib Municipality will more than likely be the service provider for the bulk services. BVI Consulting Engineers will prepare the Bulk Engineering Services Reports on the external services for the proposed housing development.

6. SERVICES

Due to the scale of the development and the level of development that is occurring within Blaauwskop Settlement, the availability of bulk services for the development will need to be investigated. The Kai !Garib Municipality will more than likely be the service provider for the bulk services. BVI Consulting Engineers will prepare the Bulk Engineering Services Reports on the external services for the proposed housing development.

6.1 WATER

The water source, upgrades to existing water reticulation infrastructure and connection with the proposed internal water network will need to be determined. Back-up storage will also need to be investigated. The availability and confirmation that sufficient capacity exists to service the proposed development will need to be addressed, and confirmation received from the engineers and/or municipality.

6.2 SEWER

The availability of sewer services in the Blaauwskop and Keimoes area is of concern. Potential upgrades to existing infrastructure or the potential development of new infrastructure to adequately service the proposed development will need to be investigated. The availability and confirmation that sufficient capacity exists to service the proposed development will need to be addressed and confirmed by the engineers and/or the municipality.

6.3 ROADS

The internal road network and design standards, including any access roads, will need to be determined in line with the proposed layout design.

6.4 STORMWATER

The internal stormwater network and links and upgrades to the existing external stormwater network, will need to be determined and addressed in the Bulk Engineering Services Reports. This will be determined once a conceptual site layout plan has been developed.

6.5 SOLID WASTE (REFUSE) REMOVAL

Refuse removal will be via the Municipal waste stream and disposed of at the nearest municipal bulk solid waste disposal site. Sufficient capacity to adequately service the proposed development will need to be confirmed by the engineers and municipality.

6.6 ELECTRICITY

The proposed internal electrical network, electrical infrastructure requirements, upgrades to the existing external electrical network, including the provider and confirmation of sufficient capacity will need to be determined and addressed in the Bulk Engineering Services Reports.

7. ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS

Environmental issues were raised through informal discussions with the project team, specialists and authorities. All issues raised will be assessed in the specialist reports and will form part of the Environmental Impact Report. Additional issues raised during the public participation will be listed in the Final Scoping Report.

The following potential issues have been identified:

7.1 BOTANICAL

A Botanical Impact Assessment (BIA) will be conducted to determine if there is any sensitive or endangered vegetation on the proposed site. According to the SANBI BGIS website the proposed site would be covered with Bushmanland Arid Grassland (least threatened) and is located within a Critical Biodiversity Area (CBA). Due to the size of the development (approximately 50ha), there will be a loss of vegetation during the construction phase of the project. The BIA will be attached to the Environmental Impact Report.

7.2 FRESHWATER

A **Freshwater Report** was compiled and is attached to this report as **Appendix 1G**. According to the Freshwater Report, the proposed housing development transverses a number of drainage lines.

Freshwater Report (Appendix 1G), the proposed housing development transverses a number of drainage lines. According to the Freshwater Report (attached as Appendix 1G), the proposed housing development will entirely alter the drainage lines.

The drainage lines are mostly dry, with water only during rains and perhaps shortly thereafter. During the odd thunder storm, drainage lines can come down in flood. These floods maintain the drainage line's morphological integrity, as sediments are moved and these water ways are scoured out. Because rainfall events are far apart, the drainage lines must have been form over millennia, even since geological times (see **Appendix 1G**). Around the Orange River and even the Sak and Hartbees River, large-scale agriculture has changed the drainage lines into drainage channels among the vineyards and orchards. The upper reaches away from the rivers are less impacted, even near-pristine, as intense agriculture is not possible, apart from those areas where water is piped over long distances from the Orange River (see **Appendix 1G**).

The mostly dry drainage lines in sub-catchment 2 and 3 run right through the existing housing, with houses located on the banks, without any buffer zone (see **Appendix 1G**). The drainage lines pass over the irrigation canal. Concrete slabs have been constructed over the canal at each of the crossings, with concrete walls on either side of the crossing to keep storm water from entering the canal (see Appendix 1G). The impacts on sub-catchments 2 and 3 are going to be the greatest, as the township will be built right over these drainage lines (see **Appendix 1G**). Drainage lines of sub-catchments 1 and 4 are adjacent to the new development and would be spared of houses right on its banks (see **Appendix 1G**).

The impacts include trampling and over-grazing of the sub-catchment, destruction of the drainage lines, littering and the danger of untreated sewage ending up in the drainage canal and the Orange River (see **Appendix 1G**).

Mitigation Measures

A buffer zone of 20m should be allowed on either side of these drainage lines, a green zone through the envisaged township. The township should be arranged in such a way that the drainage lines still connect to the stormwater infrastructure over the irrigation canal. Stormwater should not be allowed to enter the irrigation canal. Where necessary, additional infrastructure should be built over the irrigation canal.

Litter and household waste have been noted in the drainage lines of the existing township. This problem, if not properly managed, will escalate when the township expands. Litter and waste should not be allowed to enter the canal. It should not be allowed to wash down the drainage lines and into the Orange River. Infrastructure to catch the waste should be installed and these structures should be regularly cleaned.
Another 1500 households would put strain on the current sewage and wastewater handling system. It would be disastrous if sewage ends up in the Orange River. Proper planning and infrastructure are necessary.

The three smaller sub-catchments can probably not produce enough runoff, even during a large rainfall event, to pose a threat to the new development. The larger sub-catchment of almost 90 000 ha is large enough to produce a sudden and dangerous pulse of runoff during a high rainfall event, perhaps of 30 to 40mm in a day. Residents should be aware of the potential hazard (see **Appendix 1G**)

The authorities will have to give the dangers of children in and around the irrigation canal some thought, because the danger of drownings increases as the township grows. A General Authorisation is required from Department of Water and Sanitation ("**DWS**"). The impact of the proposed development on these watercourses are to be further investigated in the Environmental Impact Report phase.

7.3 HERITAGE

A Heritage Impact Assessment ("HIA") was conducted and is attached to this report as **Appendix 1H**.
The HIA identified the following heritage resources on site:

- living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- Ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; definition used in KwaZulu-Natal Heritage Act 2008);
- places, buildings, structures and equipment; places to which oral traditions are attached or which are associated with living heritage; historical settlements and townscapes;
- landscapes and natural features; geological sites of scientific or cultural importance;
- archaeological and palaeontological sites; graves and burial grounds;
- public monuments and memorials; sites of significance relating to the history of slavery in South Africa; movable objects, but excluding any object made by a living person; and battlefields.

A **Heritage Impact Assessment** ("**HIA**") was conducted and is attached to this report as **Appendix 1H**. The HIA identified the following heritage resources on site:

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- Three incidences of lithic material were recorded outside the development footprint, towards the south.
- No formal or informal graves were identified.
- The proposed site has zero palaeontological significance

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

- The lithic traces on the landscape of the study area are of low significance and the impact of the development on these resources are inconsequential. No other heritage was identified. Therefore, no further mitigation is required, and from a heritage point of view we recommend that the proposed development can continue.
- Due to the zero palaeontological significance of the area, no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area as the igneous rocks underlying the site are not fossiliferous. It is therefore recommended that the project be exempt from a full Paleontological Impact Assessment (Butler 2019).
- Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any possible discovery of finds such as stone tool scatters, artefacts, human remains, or fossils are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find.

7.4 VISUAL IMPACT

The potential impact on the sense of place of the proposed development will also be considered. However, due to the nature of the activity, the surrounding land-uses, and that the sense of place is not expected to be significantly altered by the proposed development, no further studies are suggested.

7.5 OTHER ISSUES IDENTIFIED

Any further issues raised during the public participation process or by the Competent Authority not mentioned in this section, will be dealt with during the EIA phase.

8. DETAILS OF THE PUBLIC PARTICIPATION PROCESS

Interested and Affected Parties ("I&APs") have been and will be identified throughout the process. Landowners adjacent to the proposed site, relevant organs of state, organizations, ward councillors and the Local and District Municipality were added to this database. A complete list of organisations and individual groups identified to date is shown in **Appendix 1K.**

Public Participation will be conducted for the proposed development in accordance with the requirements outlined in Regulation 41 of the NEMA EIA Regulations, 2014 (as amended). The issues and concerns raised during the scoping phase will be dealt with in the EIA phase of this application.

As such each subsection of Regulation 41 contained in Chapter 6 of the NEMA EIA Regulations, 2014 (as amended) will be addressed separately to thereby demonstrate that all potential Interested and Affected Parties ("I&AP's") were notified of the proposed development.

R54 (2) (a):

R41 (2) (a) (i): The site notices (A2 and A3 sizes) were placed at different locations around the project site as well as at the municipality office in town. (please refer to **Appendix 1D**)

The posters contained all details as prescribed by R41(3) (a) & (b) and the size of the on-site poster was at least 60cm by 42cm as prescribed by section R41 (4) (a).

R41 (2) (a) (ii): N/A. There is no alternative site.

R41 (2) b):

R41 (2) (b) (i): N/A. The Applicant is the landowner

R41 (2) (b) (ii): The Initial notification letter (**Appendix 1C**) was circulated to residents within a 200m radius of the project site. Also see **Appendix 1D** for the letter drops.

R41 (2) (b) (iii): An initial notification letter was sent to the municipal Ward councillor at the Kai !Garib Municipality, for the ward in which the site is situated (please refer to **Appendix 1C** for proof of notification letters sent).

R41 (2) (b) (iv): An initial notification letter was sent to the Kai !Garib Municipality as the municipality is the Applicant.

R54 (2) (b) (v): Initial notification letter (please refer to **Appendix 1C** for proof of notification letters sent) will be sent to the following organs of state having jurisdiction in respect of any aspect of the activity:

- Department of Water and Sanitation;
- Department of Agriculture and Land Reform;
- Department of Roads and Public Works;
- Department of Agriculture, Forestry and Fisheries;
- Department of Co-operative Governance, Human Settlements and Traditional Affairs;
- Department of Environment and Nature Conservation (D:E&NC);

- South African Heritage Resources Agency;
- Kai !Garib Municipality; and
- ZF Mgcawu District Municipality.

R41 (2) (c) (i): An advertisement was placed in the local newspaper, **Kalahari Bulletin**, on 1**7 January 2019** (please refer to **Appendix 1B** for proof of advertisement).

R41 (2) (d): N/A

R41 (6):
R41 (6) (a): All relevant facts in respect of the application were made available to potential I&AP's.

R41 (6) (b): I&AP's were given more than a 30-day registration and comment period on the proposed application during the first round of public participation.

R42 (a), (b), (c) and R43(2): A register of interested and affected parties was opened, maintained and is available to any person requesting access to the register in writing (please refer to **Appendix 1K** for the list of I&APs).

Please find attached in **Appendix 1**:

- Proof of Notice boards, advertisements and notices that were sent out;
- List of potential interested and affected parties;
- Site Co-ordinates;
- Summary of issues raised by interested and affected parties and EAP responses;
- Title Deed;
- Heritage Impact Assessment; and
- Freshwater Report.

9. PLAN OF STUDY FOR THE EIA

9.1.1 TASKS TO BE UNDERTAKEN

Due to the nature of the proposed development there are a number of activities that will still need to be undertaken during the next phase of the project. The proposed process is as described as follows (This follows from a Scoping process to be accepted by the D:E&NC):

The NEMA Application Form will be submitted to D:E&NC along with the Draft Scoping Report available for a 30-day comment period starting from **14 August 2020 to 16 October 2020**. Comments received during the Public Participation Process ("PPP") will be incorporated into the Final Scoping Report, to be submitted to D:E&NC for a decision.

The following is a list of tasks to be performed as part of the EIA Process. Should the process be modified significantly, changes will be copied to D:E&NC.

EIA PROCESS	
TASK	TIMEFRAMES
Submit NEMA Application and Draft Scoping Report (DSR) and Plan of Study for EIA to D:E&NC and distribute to registered I&APs for comment	August 2020
Submit Final Scoping Report (FSR) and Plan of Study to D:E&NC for a decision	October 2020
Receive approval for the FSR and the Plan of Study for EIA.	November 2020
Undertake specialist studies. • Heritage Impact Assessment received; and • Freshwater Report received. • Awaiting the submission of the Biodiversity Impact Assessment and Geotechnical Report.	August 2020 – November 2020
Compile the Draft Environmental Impact Report (EIR) for public comment based on specialist information.	November 2020
Submit Draft EIR for public comment.	November 2020 - December 2020
Receive responses to the Draft EIR.	December 2020
Preparation of a FINAL EIR and submission to D:E&NC.	January 2021

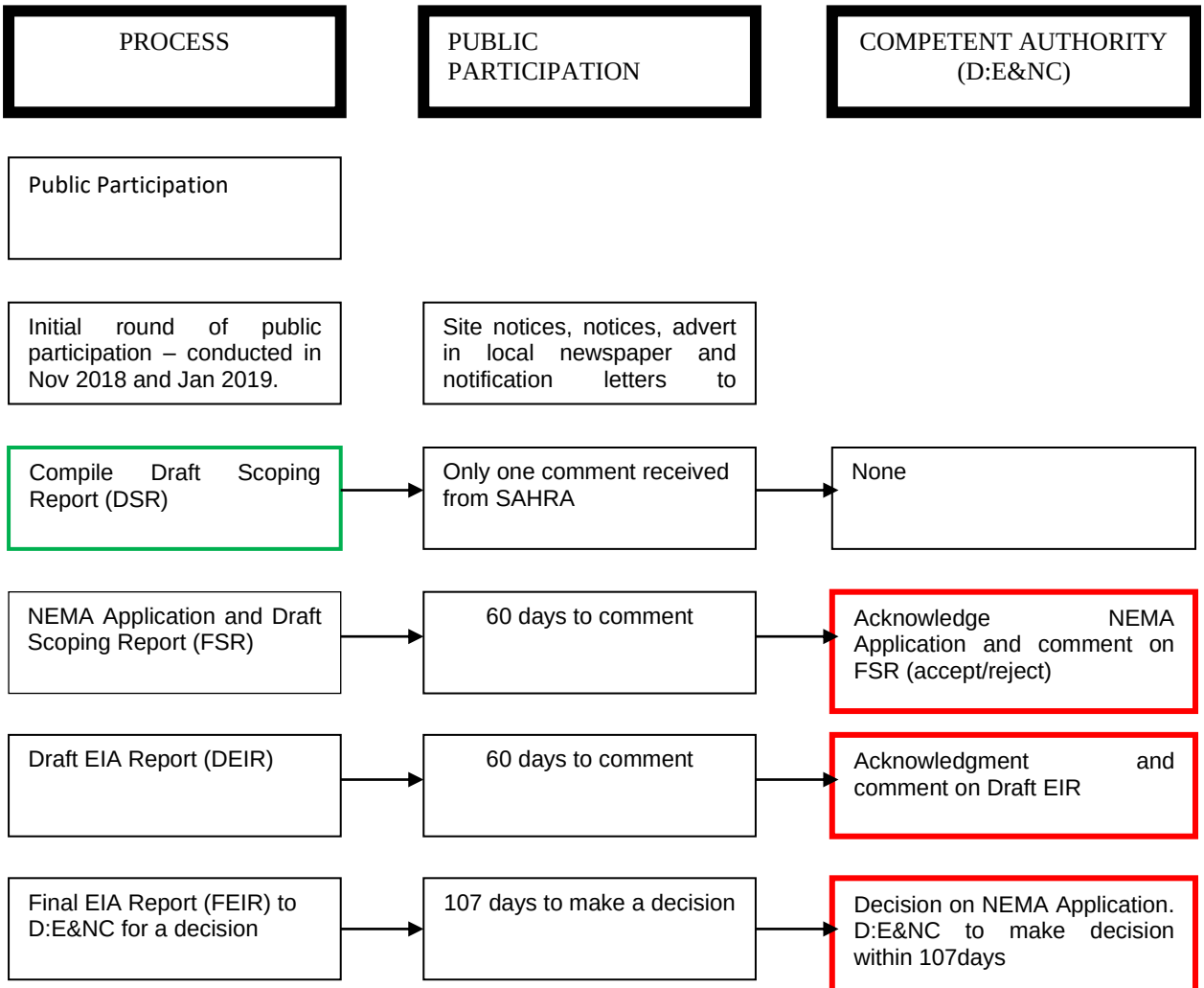


Figure 13. Summary of the EIA process and public participation process. The red indicates the stages where the competent authority will be consulted during the process.

9.2 PUBLIC PARTICIPATION AND INTERESTED AND AFFECTED PARTIES

Please refer to Figure 15 to see where the public participation process is present in the environmental impact assessment. The Interested and Affected Parties will have a chance to view and comment on all the reports that are submitted. The figures also indicated what timeframes are applicable to what stage in the process. If required, meetings with key stakeholders will be held.

At the end of the comment period, the EIR will be revised in response to feedback received from I&APs. All comments received and responses to the comments will be incorporated into the Final Environmental Impact Report (EIR). The Final EIR will then be submitted to D:E&NC for consideration and decision-making.

Correspondence with I&APs will be via e-mail, post, fax, telephone, and newspaper advertisements.

Should it be required, this process may be adapted depending on input received during the on-going process and as a result of public input. D:E&NC will be informed of any changes in the process.

9.3 CRITERIA FOR SPECIALIST ASSESSMENT OF IMPACTS

As a result of the environmental issues and potential impacts identified in *Section 6*, the need for the following specialist studies has been identified:

- Biodiversity Assessment
- Freshwater Assessment
- Heritage Impact Assessment
- Geotechnical Report

The impacts of the proposed activity on the various components of the receiving environment will be evaluated in terms of duration (time scale), extent (spatial scale), magnitude and significance as outlined in Table 1. These impacts could either be positive or negative.

The magnitude of an impact is a judgment value that rests with the individual assessor while the determination of significance rests on a combination of the criteria for duration, extent and magnitude. Significance thus is also a judgment value made by the individual assessor.

Table 1: Criteria used for evaluating impacts

Criteria	Category
Nature of impact	This is an evaluation of the effect that the construction, operation and maintenance of a proposed dam would have on the affected environment. This description should include what is to be affected and how.
Duration (Predict whether the lifetime of the Impact will be temporary (less than 1 year) short term (0 to 5 years); medium term (5 to 15 years); long term (more than 15 years, with the Impact ceasing after full implementation of all development components with mitigations); or permanent.	**Temporary:** < 1 year (not including construction) **Short-term:** 1 – 5 years **Medium term:** 5 – 15 years **Long-term:** >15 years (Impact will stop after the operational or running life of the activity, either due to natural course or by human interference) **Permanent:** Impact will be where mitigation or moderation by natural course or by human interference will not occur in a particular means or in a particular time period that the impact can be considered temporary
Extent (Describe whether the impact occurs on a scale limited to the site area; limited to broader area; or on a wider scale)	**Site Specific:** Expanding only as far as the activity itself *(onsite)* **Small:** restricted to the site's immediate environment within 1 km of the site *(limited)* **Medium:** Within 5 km of the site *(local)* **Large:** Beyond 5 km of the site *(regional)*
Intensity (Describe whether the magnitude (scale/size) of the Impact is high; medium; low; or negligible. The specialist study must attempt to quantify the magnitude of impacts, with the rationale used explained)	**Very low:** Affects the environment in such a way that natural and/or social functions/processes are not affected **Low:** Natural and/or social functions/processes are slightly altered **Medium:** Natural and/or social functions/processes are notably altered in a modified way **High:** Natural and/or social functions/processes are severely altered and may temporarily or permanently cease

Probability of occurrence Describe the probability of the Impact actually occurring as definite (Impact will occur regardless of mitigations	**Improbable:** Not at all likely **Probable:** Distinctive possibility **Highly probable:** Most likely to happen **Definite:** Impact will occur regardless of any prevention measures
Status of the Impact Describe whether the Impact is positive, negative (or neutral).	**Positive:** The activity will have a social/ economical/ environmental benefit **Neutral:** The activity will have no affect **Negative:** The activity will be socially/ economically/ environmentally harmful
Degree of Confidence in predictions State the degree of confidence in predictions based on availability of information and specialist knowledge	**Unsure/Low:** Little confidence regarding information available (<40%) **Probable/Med:** Moderate confidence regarding information available (40-80%) **Definite/High:** Great confidence regarding information available (>80%)
Significance (The impact on each component is determined by a combination of the above criteria and defined as follows) The significance of impacts shall be assessed with and without mitigations. The significance of identified impacts on components of the affected biophysical or socio-economic environment (and, where relevant, with respect to potential legal requirement/s) shall be described as follows:	**No change:** A potential concern which was found to have no impact when evaluated **Very low:** Impacts will be site specific and temporary with no mitigation necessary. **Low:** The impacts will have a minor influence on the proposed development and/or environment. These impacts require some thought to adjustment of the project design where achievable, or alternative mitigation measures **Moderate:** Impacts will be experienced in the local and surrounding areas for the life span of the development and may result in long term changes. The impact can be lessened or improved by an amendment in the project design or implementation of effective mitigation measures. **High:** Impacts have a high magnitude and will be experienced regionally for at least the life span of the development, or will be irreversible. The impacts could have the no-go proposition on portions of the development in spite of any mitigation measures that could be implemented.

In addition to determining the individual impacts against the various criteria, the element of mitigation, where relevant, will also be brought into the assessment. In such instances the impact will be assessed with a statement on the mitigation measure that could/should be applied. An indication of the certainty of a mitigation measure considered, achieving the end result to the extent indicated, is given on a scale of 1-5 (1 being totally uncertain and 5 being absolutely certain), taking into consideration uncertainties, assumptions and gaps in knowledge.

Table 2: The stated assessment and information will be determined for each individual issue or related groups of issues and presented in descriptive format in the following table example or a close replica thereof.

Impact Statement:		
Mitigation:		
Ratings	Duration	
	Extent	
	Intensity	
	Probability of impact	
	Status of Impact (Positive/negative)	
	Degree of confidence	
Significances	Significance **without** Mitigation	
	Significance ***WITH*** Mitigation	
Indication of the certainty of a mitigation measure considered, achieving the end result to the extent indicated, is given on a scale of 1-5 (1 being totally uncertain and 5 being absolutely certain), taking into consideration uncertainties, assumptions and gaps in knowledge		
Legal Requirements (Identify and list the specific legislation and permit requirements which are relevant to this development):		

10. CONCLUSION AND RECOMMENDATIONS

A scoping exercise is being undertaken to present the proposed activities to the Interested and Affected Parties ("I&APs") and to identify environmental issues discussed in this report and concerns raised as a result of the proposed development alternatives to date. The issues and concerns were raised by I&APs, authorities, the project team as well as specialist input, based on baseline studies undertaken.

This Draft Scoping Report, being undertaken in terms of NEMA, summarises the process undertaken, the alternatives presented, and the issues and concerns raised.

As a result of the above, the need for the following specialist studies, have been identified:

- Biodiversity Assessment
- Freshwater Assessment
- Heritage Impact Assessment
- Geotechnical Report

Any further issues raised as a result of the Public Participation Process ("PPP") will be dealt with during the Environmental Impact Assessment ("EIA") phase.

The significance of the impacts associated with the alternatives proposed will be assessed in these specialist studies, as part of the EIA. Once the specialist studies have been completed, they will be summarised in an Environmental Impact Report ("EIR"), which integrates the findings of the assessment phase of the EIA.

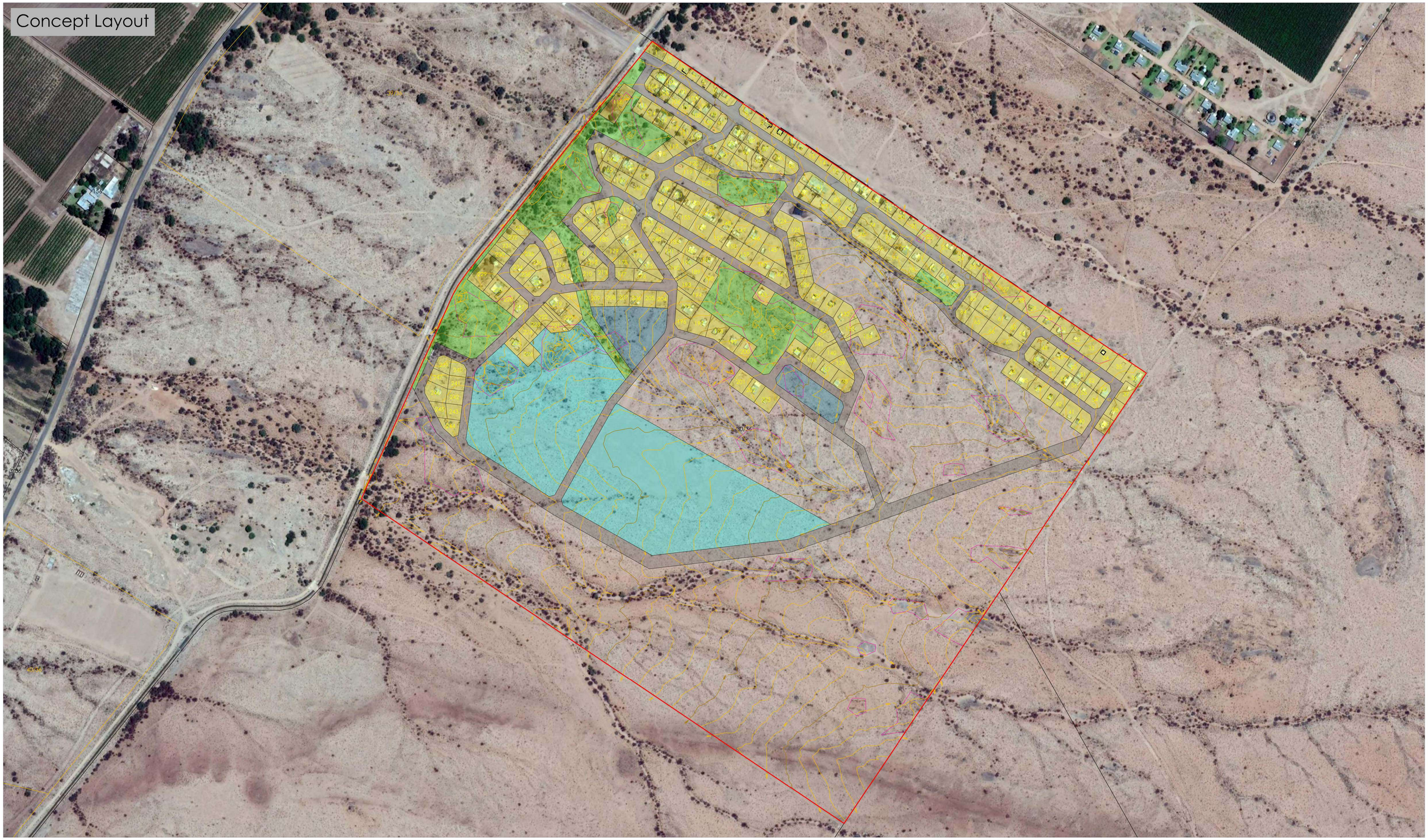
Based on the significance of the issues raised during the ongoing PPP Process and Scoping Phase, it is evident that an EIA is required. ***It is therefore recommended that authorisation for the commencement of an EIA for the proposed development is granted.*** Should the EIA process be authorised, the significant issues raised in the process to date will be addressed and the specialist studies noted in this report, will be undertaken.

11. DETAILS AND EXPERTISE OF THE EAP

This Draft Scoping Report was prepared by Emile Esquire who has a BA. Degree in Geography and Environmental Studies. Emile Esquire was employed as an Environmental Officer at the Western Cape Department of Environmental Affairs and Development Planning ("DEA&DP"), administering Section 24G Rectification Applications, for a period of 3 years and 6 months. Emile Esquire joined EnviroAfrica CC during May 2017; is employed as an Environmental Assessment Practitioner ("EAP") and is working on variety of projects in the Western Cape and Northern Cape. Emile is generally performing duties as an EAP with regards to the NEMA EIA Applications. The whole process and report are supervised by Bernard de Witt who has more than 21 years experience in environmental management and environmental impact assessments.

(----------END----------)

Concept Layout



KAI !GARIB MUNICIPALITY

PLANGENI/ BLAAUWSKOP TOWNSHIP FORMALISATION

Design:	JP Theron (A/2394/2016)
Drawn:	JP Theron (A/2394/2016)
Date:	November 2018
Scale:	1:2200

Plan nr:

CL/DRW/KAI2017/DIGITAL

KAI !GARIB MUNICIPALITY

Postal Address:
Private Bag X6
Kakamas
8870

Tel No: 054 461 6700
Fax No: 054 461 6401

Property Description:

Portion 30 of the Farm Blauwskop, No. 36, Kai !Garib Municipality, Nothern Cape Province

Proposed Land Uses in terms of Kai !Garib Scheme Regulations

Colour & Numbers	Land Use Description	Total Units	Schedule of Sizes: average size	total area per use	percentage covered by use
	Agricultural Zone I				
	Agricultural Zone II				
	Residential Zone I				
	Residential Zone II				
	Residential Zone III				
	Residential Zone IV				
	Business Zone I				
	Business Zone II				
	Business Zone III				
	Business Zone IV				
	Business Zone V				
	Industrial Zone I				
	Industrial Zone II				
	Industrial Zone III				
	Institutional Zone I				
	Institutional Zone II				
	Institutional Zone III				
	Open Space Zone I				
	Open Space Zone II				
	Open Space Zone III				
	Transport Zone I				
	Transport Zone II				
	Transport Zone III				
	Transport Zone IV				
	Authority Zone I				
	Authority Zone II				
	Resort Zone II				
	Special Zone				
	Undetermined Zone				
	TOTAL	89	4.3ha	4.3ha	100%

Topographical Information

Detail Description	Symbol
Contours	
Fences	
Water furrows	
Electricity cable	
Existing Houses	
Rock Outcrops	

General Notes:

Locality Map: Kai Garib Municipality

MACROPLAN
TOWN & REGIONAL PLANNERS
YOUR PARTNERS IN PROFESSIONAL PLANNING SERVICES

054 332 3642
4A Murray Avenue, Upington 8801 macroplan@mweb.co.za
PO Box 987, Upington 8800 www.macroplan.info

www.kalaharibulletin.co.za OM TE ADVERTEER SKAKEL | Upington T: 054 331 3482 · Katu T: 053 723 2685 · Kuruman T: 053 712 1472 · E: phidelia.abrahams@volksblad.com

Geklassifiseerd

SEKURITEIT

1865

Elektriese heinings en hekmotors: Profesionele installasie. Francois
☎072 156 4035

MOTORS TE KOOP

3025

HUIS TE SEODIN,
Kuruman: Erf 3331 vk meter groot en woonhuis met sit-, eet- en TV-kamer, kombuis en spens, 4 slk, 2 badk. Toegerus met lugversorgers, diefwering, alarm en kamera. Een 3-kamer-woonstel, dubbelmotorhuis met stoor en afdak asook apartstaande enkelmotorhuis. Boorgat met dompelpomp en een met windpomp en sinkdam. Goed versorgde tuin. Alles vir die prys van R1.8 miljoen o.n.a. Skakel eienaar
083 524 4995.

BOEDELKENNIS-GEWINGS

BOEDELS: KREDITEURE EN DEBITEURE

4201

DUVENHAGE & VAN DER MERWE

X32V38L-KA190418

BOEDEL WYLE: D S TOTWE
BOEDELNOMMER: 981/2018

BOEDELKENNISGEWING

In die boedel van wyle DEREKE STANLEY TOTWE, identiteitsnommer 440519 5142 085, getroud binne gemeenskap van goedere met NTSHEKISANG EMILY TOTWE, identiteitsnommer 490510 0748 082, in lewe van Huis 27, Mentu Village, distrik Kuruman, boedelnommer 981/2018.
Skuldeisers en skuldenaars in bogemelde boedel word versoek om hul skuld te betaal by die kantore van ondergenoemde binne 30 (dertig) dae vanaf 18 Januarie 2019.
DUVENHAGE & VAN DER MERWE ING
POSBUS 63
KURUMAN
8460.

Petra Diamonds
FINSCH MINE

Tenders are invited for: DANIëLSKUIL: DEVELOPMENT OF HIGH SCHOOL TECHNICAL CLASSROOMS

One complete set of documents will be available from MVD Kalahari at the compulsory site meeting upon payment of an amount of R700 (seven hundred rand), which is non-refundable. Cheques must be made payable to **MVD Kalahari**.

Tenders must be submitted in sealed envelopes and clearly endorsed: **Tender No: DANIëLSKUIL: DEVELOPMENT OF HIGH SCHOOL TECHNICAL CLASSROOMS** must be addressed to **FINSCH DIAMOND MINE (PTY) LTD** and must be placed in the **Tender Box**, at the Small Business Hub, Barker Street, Daniëlskuil, not later than **12:00 on Friday, 8 February 2019**. Tenders will be opened in public on the same day at the Small Business Hub, Barker Street, Daniëlskuil.

A **compulsory site inspection will be held at 14:00 on Thursday, 24 January 2019.** The Engineer will be present and any questions will then be answered. No further visits to the site will take place. Persons taking interest will gather at the office of the **Small Business Hub, Barker Street, Daniëlskuil at 14:00. Tenderers who do not attend the compulsory site inspection, will be disqualified.**

Tenderers must be bound by their tenders for a period of 90 (ninety) days from the date on which tenders are due. No tenders or copies of tenders received by facsimile machine or e-mail will be considered. Only those tenderers who are registered with the NHBRC and the CIDB, or will be capable of registering within 10 working days after the closing date for submission of tenders in a contractor grading designation equal or higher than a contractor grading of 4 GB class for construction work, will be eligible to submit a tender.

FINSCH DIAMOND MINE (PTY) LTD reserves the right to accept a part of a tender and does not bind itself to accept the lowest and/or any tender. Their tenders must bind tenderers for a period of 90 (ninety) days from the date on which tenders are due. Tenderers attempting to influence the client with regard to the awarding of the tender after tender closure, will automatically expose their tenders to rejection.

FINSCH DIAMOND MINE (PTY) LTD

Mr Eric Britz
PO Box 7
LIME ACRES
8410

X1V5UNAH-KA170119

KAI !GARIB LOCAL MUNICIPALITY **ENVIROAFRICA CC**

NEMA PUBLIC PARTICIPATION PROCESS

PROPOSED FORMALISATION OF GAMAKOR AND NOODKAMP LOW COST HOUSING DEVELOPMENT ON PORTIONS 0 AND 128 OF FARM KOUSAS NO. 459 AND ERVEN 1470, 1474 AND 1480, KEIMOES, GORDONIA RD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE.

Notice is hereby given of the intention to submit an application and the public participation process in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA), Environmental Impact Assessment Regulations, 2014. The proposed formalisation of Gamakor and Noodkamp low cost housing development on portions 0 and 128 of farm Kousas No. 459, and erven 1470, 1474 and 1480, Keimoes, Gordonia Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape, includes activities listed in terms of the NEMA EIA Regulations 2014.

EnviroAfrica CC has been appointed by Kai !Garib Local Municipality, to undertake the NEMA Application for Environmental Authorisation process.

Application for environmental authorisation to undertake the following activities:

Government Notice R327 (Listing Notice 1): 9, 10, 12, 19, 24, 28
Government Notice R325 (Listing Notice 2): 15
Government Notice R324 (Listing Notice 3): 4, 14

*Please note that the listed activities above may change during the course of the NEMA Application process. Registered I&APs will be notified of any changes.

Project description and location:
The proposed development is located in the town of Keimoes. The application proposes the following activities:

- The rezoning and the subdivision of 1 500 erven for low cost houses. Associated infrastructure such as water, electricity, sewage, solid waste removal and the total residential area to be developed would be approximately 104 ha. The proposed site is located on the western side of the town of Keimoes, and the N14 national road is approximately 310 m south of the proposed site.
  The site co-ordinates are 28° 41' 52.60" S, 20° 56' 51.34" E.

Public participation:

Interested and Affected Parties (I&APs) are hereby notified of the application and invited to register (in writing) and/or provide initial comments and identify any issues, concerns or opportunities relating to this project to the contact details provided below, on or before **18 February 2019.** In order to register or submit comment, I&APs should refer to the project name and provide their name, address and contact details *(indicating your preferred method of notification)* and an indication of any direct business, financial, personal or other interest which they have in the application. You are also requested to pass this information to any person you feel should be notified. Please note that future correspondence will only be sent to registered Interested and Affected Parties.
Please note that only Registered I&APs:

- will be notified of the availability of reports and other written submissions made (or to be made) to the Department by the applicant and be entitled to comment on these reports and submissions.
- will be notified of the outcome of the application, the reasons for the decision and that an appeal may be lodged against a decision and
- will be notified of the applicant's intention to appeal the decision of the competent authority, together with an indication of where and for what period the appeal submission will be available for inspection.

Consultant: EnviroAfrica CC, PO Box 5367, Helderberg 7135, fax 086 512 0154, tel. 021 8511616, e-mail: admin@enviroafrica.co.za

X1V5UNGR-KA170119

Emile Esquire

From: Emile Esquire <emile@enviroafrica.co.za>
Sent: Tuesday, 15 January 2019 2:53 PM
To: 'mm@kaigarib.gov.za'; 'mayor@kaigarib.gov.za'; 'finiesd@gmail.com'; 'JacolineMa'; 'AbrahamsA@dws.gov.za'; 'shibambus@dws.gov.za'; 'Schwartz Chantel (UPN)'; 'TTshimakwane'; 'ORiba'; 'Ordain Riba'; 'sylvia.moholo@dpw.gov.za'; 'nhiggitt@sahra.org.za'; 'marinakwgv@isat.co.za'; 'mariuslouw111@gmail.com'; 'minibos@yahoo.com'; 'dewaal@kaigarib.gov.za'; 'dewaali@kaigarib.gov.za'
Subject: Initial Invitation to Register as I&APs: Proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality,
Attachments: Initial notification letters_Blaauwskop Settlement Behuising.pdf

Dear Interested and Affected Parties,

Interested and Affected Parties (I&APs) are hereby notified of the application and invited to register (in writing) and/or provide initial comments and identify any issues, concerns or opportunities relating to this project to the contact details provided below, on or before 18 February 2019. In order to register or submit comment, I&APs should refer to the project name, and provide their name, address & contact details (indicating your preferred method of notification) and an indication of any direct business, financial, personal, or other interest which they have in the application. You are also requested to pass this information to any person you feel should be notified. Please note that future correspondence will only be sent to registered Interested and Affected Parties.

Please note that only Registered I&APs:
- will be notified of the availability of reports and other written submissions made (or to be made) to the Department by the applicant, and be entitled to comment on these reports and submissions;
- will be notified of the outcome of the application, the reasons for the decision, and that an appeal may be lodged against a decision; and
- will be notified of the applicant's intention to appeal the decision of the competent authority, together with an indication of where and for what period the appeal submission will be available for inspection.

Consultant: EnviroAfrica CC. P.O. Box 5367, Helderberg, 7135 / Fax: 086 512 0154 / Tel: 021 8511616 / E-mail: admin@enviroafrica.co.za / emile@enviroafrica.co.za

In addition, please find attached notification letter dated 15 January 2019.

Kind regards,

Emile Esquire

EnviroAfrica

Environmental Consultant
EnviroAfrica cc
p: +27 21 851 1616
f: +27 86 512 0154
a: Unit 7, Pastorie Park, Reitz St, Somerset West, 7130
P.O. Box 5367, Helderberg, 7135
w: www.enviroafrica.co.za e: emile@enviroafrica.co.za

15 January 2019

Dear Interested and Affected Party

NEMA PUBLIC PARTICIPATION PROCESS

PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW COST HOUSING DEVELOPMENT ON PORTION 30 OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE

Notice is hereby given of the intention to submit an application, and the public participation process, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended ("NEMA"), Environmental Impact Assessment Regulations, 2014. The proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape, includes activities listed in terms of the NEMA EIA Regulations 2014.

EnviroAfrica cc has been appointed by Kai !Garib Local Municipality, to undertake the NEMA Application for Environmental Authorisation process.

Application for environmental authorization to undertake the following activities:
Government Notice R327 (Listing Notice 1): 9; 10; 12; 19; 24; 28
Government Notice R325 (Listing Notice 2): 15
Government Notice R324 (Listing Notice 3): 4; 14

*Please note that the listed activities above may change during the course of the NEMA Application process. Registered I&APs will be notified of any changes.

Project Description & Location:
The proposed development is located on Portion 30 of Farm Blaauwskop No. 36, Kenhardt Road, Blaauwskop Settlement, Northern Cape. The application proposes the following activities:

- The rezoning and the subdivision of 500 Erven for low cost houses; Associated infrastructure such as water, electricity, sewage, solid waste removal; and the total residential area to be developed would be approximately 50 ha. The proposed site is located approximately 13.5km north-east of Keimoes and the R359 Road is approximately 435m west of the site. The site co-ordinates are **28° 40' 9.64" S, 21° 6' 7.49" E**.

Public Participation:
Interested and Affected Parties (I&APs) are hereby notified of the application and invited to register (in writing) and/or provide initial comments and identify any issues, concerns or opportunities relating to this project to the contact details provided below, on or before **18 February 2019.** In order to register or submit comment, I&APs should refer to the project name, and provide their name, address & contact details (*indicating your preferred method of notification)* and an indication of any direct business, financial, personal, or other interest which they have in the application. You are also requested to pass this information to any person you feel should be notified. Please note that future correspondence will only be sent to registered Interested and Affected Parties.

Please note that only Registered I&APs:

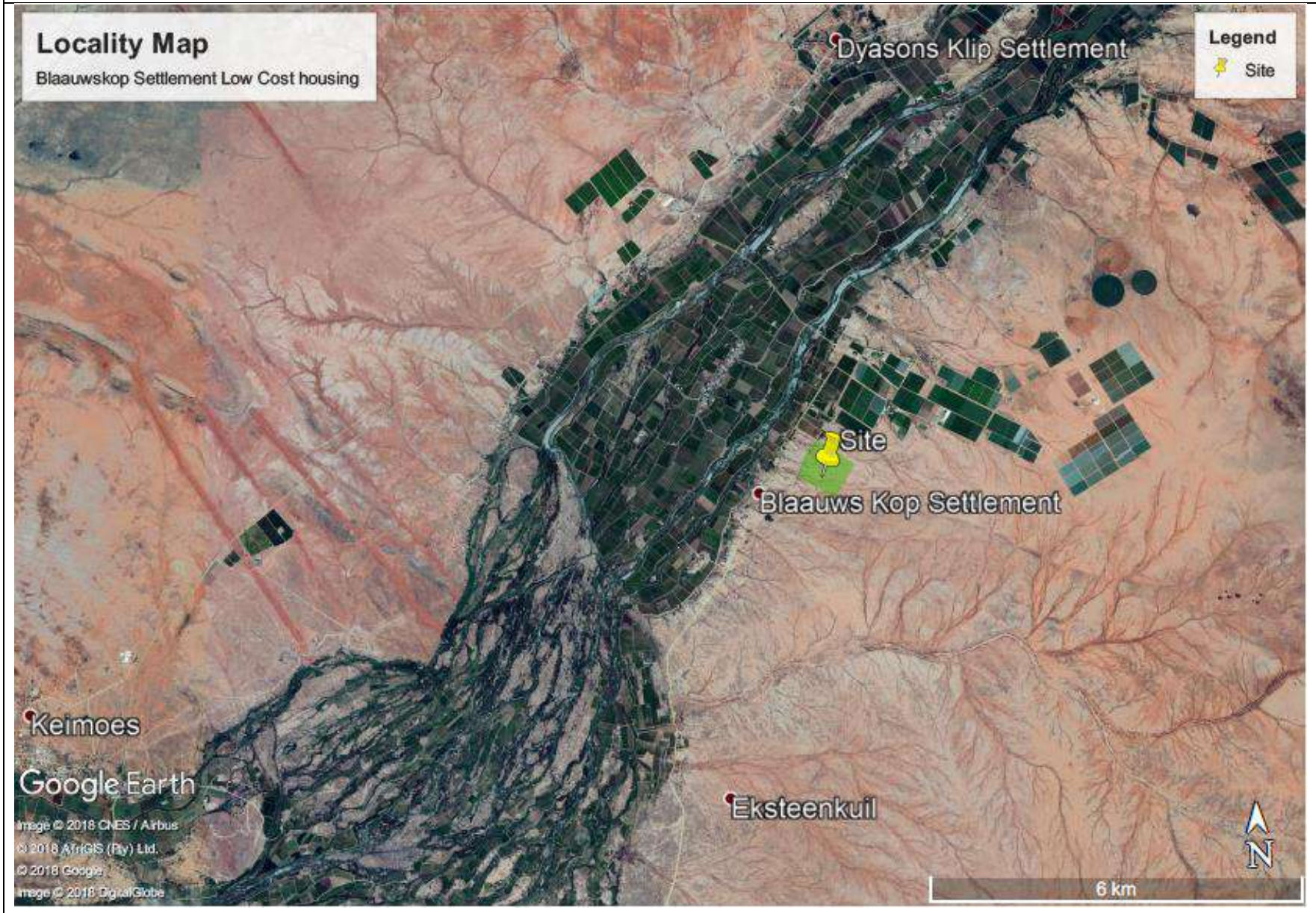
- will be notified of the availability of reports and other written submissions made (or to be made) to the Department by the applicant, and be entitled to comment on these reports and submissions;
- will be notified of the outcome of the application, the reasons for the decision, and that an appeal may be lodged against a decision; and
- will be notified of the applicant's intention to appeal the decision of the competent authority, together with an indication of where and for what period the appeal submission will be available for inspection.

Consultant: EnviroAfrica CC. P.O. Box 5367, Helderberg, 7135 / Fax: 086 512 0154 / Tel: 021 8511616 / E-mail: admin@enviroafrica.co.za

Yours sincerely

Emile Esquire
Environmental Consultant
EnviroAfrica cc

PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW COST HOUSING DEVELOPMENT ON PORTION 30 OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE



SITE CO-ORDINATES

28° 40’ 9.64” S,
21° 6’ 7.49” E.

THE SITE

N

ENVIRO AFRICA REF:

0489

JANUARY 2019

EnviroAfrica

INITIAL INVITATION TO REGISTER

EnviroAfrican Ref: 0489

EnviroAfrica

Environmental Planning and Impact Assessment Consultants
Omgewingsbeplanning en Impakbeoordeling Konsultante

I&AP List for: Blaauwskop Settlement Low Cost Housing

DENC Ref:

Advert Placed:

Date:

No.	Title	Initials/Name	Surname	Affiliation	Postal Address	Town/City	Code	Telephone	Fax	E-mail
1. Applicant										
4.1	Mr	JG	Lategan	Kai !Garib Municipality (Manager)	Private Bag X6	Kakamas	8870	(054) 461 6700	(054) 461 6401	mm@kaigarib.gov.za ✓
2. Property / Land Owners:										
4.2	Mr	JG	Lategan	Kai !Garib Municipality (Manager)	Private Bag X6	Kakamas	8870	(054) 461 6700	(054) 461 6401	mm@kaigarib.gov.za
3. Occupiers										
3.1		Mailrops done								
4. Municipality										
4.1	Mr	Marius	Louw	Kai !Garib Municipality (Mayor)	Private Bag X6	Kakamas	8870	(054) 461 6700 079 867 0617	(054) 461 6401	mayor@kaigarib.gov.za ✓
4.2	Mr	JG	Lategan	Kai !Garib Municipality (Manager)	Private Bag X6	Kakamas	8870	(054) 461 6700	(054) 461 6401	mm@kaigarib.gov.za
5. Municipal Ward Councillor:										
5.1	Ms	D	Fienies	Ward Councillor - Ward 8	Private Bag X6	Kakamas	8870	054 461 6700 084 831 3541	054 461 6401	fieniesd@gmail.com ✓
6. Ratepayers's association										
6.1										
7.State Organisations:										
7.1	Mr	Wonders	Mothibi (HOD)	NC Department of Agriculture & Land Reform	Private Bag X5018	Kimberley	8300	(053)838 9102	(053) 831 3635	✓
7.2	Ms	Jacolline	Mans	Dept Agriculture, Forestry, Fisheries	P.O.Box 2782	Upington	8800	054 338 5909	054 334 0030	JacolineMa@daff.gov.za ✓
7.3	Mr	Abe	Abrahams	Department of Water & Sanitation- Northern Cape	28 Central Road Beaconsfield	Kimberley	8301	053 830 8800 082 883 6741	(053) 831 4534	AbrahamsA@dws.gov.za ✓
7.4	Mr	Steven	Shibambu	Northern Cape Department of Water and Sanitation	Private Bag X5912	Upington	8800	054 338 5819	086 699 2007	shibambus@dws.gov.za ✓
7.5	Ms	Chantel	Schwartz	Department of Water & Sanitation- Northern Cape	Louisevale Road	Upington	8800	054 338 5836	054 334 0205	SchwartzC@dws.gov.za ✓
7.6	Ms.	T.	Tsimakwane	NC Department of Environment and Nature Conservation	Private Bag x 6102	Kimberley	8300	053 807 7300	053 807 7328	Ttsimakwane@ncpg.gov.za ✓

(12)

SOMERSET MALL

7.7	Mr.	Ordain	Riba	Northern Cape Department of Environment and Nature Conservation	Provincial Building (First Floor), Corner of Rivier & Nelson Mandela Road, Upington, 8800	Upington	8800	060 991 4817	0538313530	oriba.denc@gmail.com ORiba@ncpg.gov.za
7.8	Ms.	Sylvia	Moholo	Department of Roads and Public Works	Private Bag X5002	Kimberley	8300	053 838 5202	053 832 7380	sylvia.moholo@dpw.gov.za
7.9	Ms.	Natasha	Higgitt	South African Heritage Resource Agency (SAHRA)	P.O.Box 4637	Cape Town	8000	021 462 4502	021 462 4509	nhiggitt@sahra.org.za
8. Neighbours/Surrounding Property Owners										
		Maildrops done								
9. Other										
9.1	Ms.	Marina	Jordaan	Kakamas Water Users Association	Private Bag X4	Kakamas	8870	054 431 0725	054 431 0348	marinakwgv@isat.co.za

COMMENT MAIL

20[illegible]-07-15

POSTER PLACMENT & MAILDROPS: PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW COST HOUSING DEVELOPMENT ON PORTION 30 OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE – **27 NOVEMBER 2018**

Figure 1: A3 poster placed against the Kai !Garib Municipal Notice Board in Keimoes.

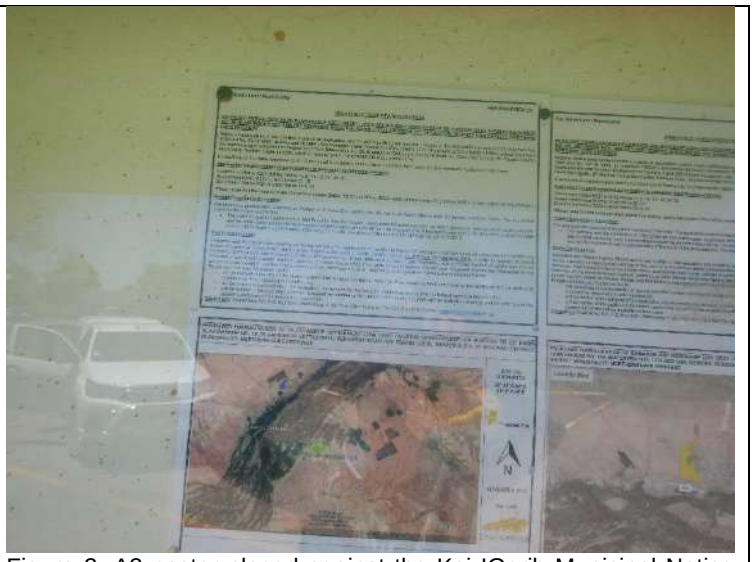


Figure 2: A3 poster placed against the Kai !Garib Municipal Notice Board in Keimoes.

Figure 3: A3 Poster placed against the door window at Kai !Garib Municipal office in Keimoes.

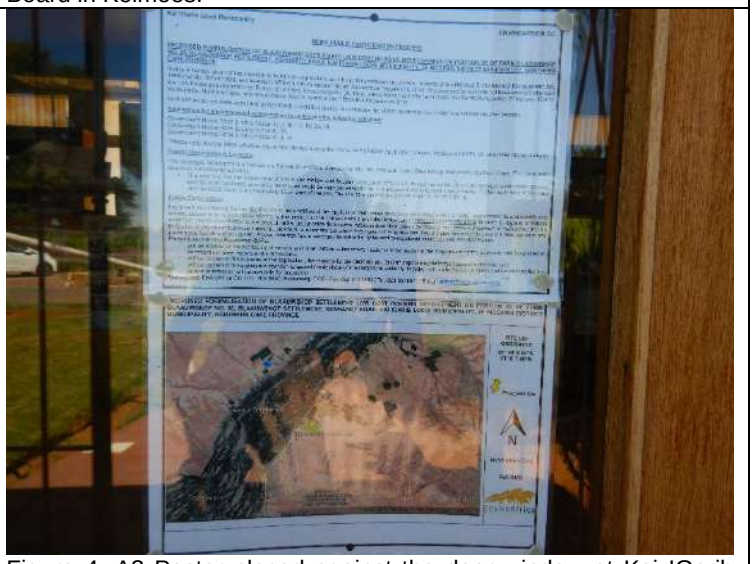


Figure 4: A3 Poster placed against the door window at Kai !Garib Municipal office in Keimoes.

Figure 5: Maildrops done at informal dwellings on site. Looking in a south-eastern direction.

Figure 6: Maildrops done at informal dwellings on site. Looking in a southern direction.

Figure 7: A2 Poster placed against the fence of an informal dwelling on site. Looking in a south-western direction.

Figure 8: A2 Poster placed against the fence of an informal dwelling on site. Looking in a south-western direction.

Figure 9: A2 Poster placed against the fence at M.J. Minimark on site.

Figure 10: A2 Poster placed against the fence at M.J. Minimark on site.

Figure 11: A2 Poster placed against the fence at M.J. Minimark on site.

Figure 12: A2 Poster placed against the fence at M.J. Minimark on site.

Figure 13: Maildrops done along this road on site. Informal dwellings can be seen in the background.

Figure 14: Maildrops done along this road on site. Informal dwellings can be seen in the background.

Figure 15: A3 Poster placed against the fence at Fanie Madidach Store on site.

Figure 16: A3 Poster placed against the fence at Fanie Madidach Store on site.

Figure 17: A3 Poster placed against the fence at Fanie Madidach Store on site.

Figure 18: A3 Poster placed against the fence at Fanie Madidach Store on site.

Figure 19: Maildrops done along this road. Informal dwellings can be seen in the background.

Figure 20: Maildrops done along this road. Informal dwellings can be seen in the background.

Figure 21: Maildrops done along this road. Informal dwellings can be seen in the background. Looking in a south-western direction.

Figure 22: Maildrops done along this road. Informal dwellings can be seen in the background. Looking in a south-eastern direction.

Figure 23: A3 Poster placed against the wall inside Louisvale Supermarket, located along R359 Road.

Figure 24: A3 Poster placed against the wall inside Louisvale Supermarket, located along R359 Road.

Figure 25: A3 Poster placed against the wall inside Louisvale Supermarket, located along R359 Road.

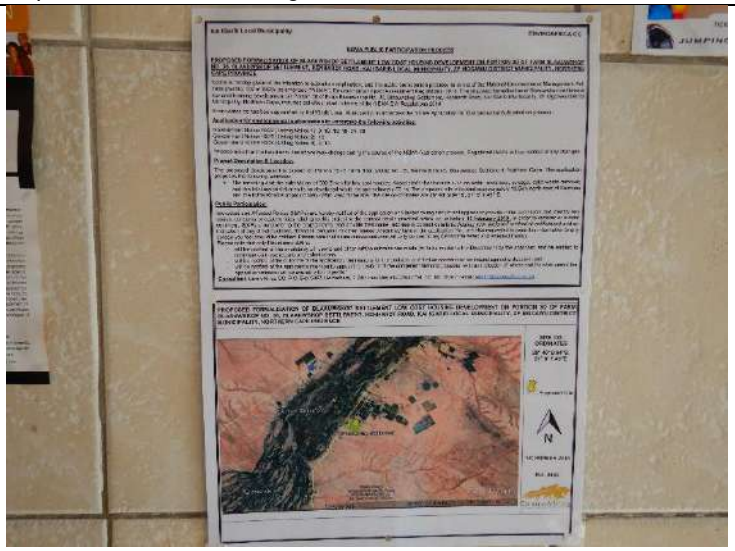


Figure 26: A3 Poster placed against the wall inside Louisvale Supermarket, located along R359 Road.

Figure 27: A3 Poster placed against the wall inside Louisvale Supermarket, located along R359 Road.

Figure 28: A3 Poster placed against the wall inside Louisvale Supermarket, located along R359 Road.

Emile Esquire

From: Emile Esquire <emile@enviroafrica.co.za>
Sent: Tuesday, 04 August 2020 3:49 PM
To: 'Natasha Higgitt'
Cc: 'Jackie | Enviro Africa'
Subject: RE: Initial Invitation to Register as I&APs: Proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipali

Dear Natasha,

I hereby acknowledge receipt of the department's email correspondence dated 16 January 2019.

Please note that I am currently busy compiling the Draft Scoping Report that will go out for public comment in due course.

EnviroAfrica appointed UBIQUE Heritage Consultants to conduct the Heritage Impact Assessment (HIA) and will also upload a copy of the Draft Scoping Report with supporting documents onto SAHRIS in due course.

I will let you know when the Draft BAR will go out for public comment.

Please don't hesitate to contact me should you require any additional information.

Kind regards,

Emile Esquire

EnviroAfrica

Environmental Consultant
EnviroAfrica cc
p: +27 21 851 1616
f: +27 86 512 0154
a: Unit 7, Pastorie Park, Reitz St, Somerset West, 7130
P.O. Box 5367, Helderberg, 7135
w: www.enviroafrica.co.za e: emile@enviroafrica.co.za

From: Natasha Higgitt <nhiggitt@sahra.org.za>
Sent: Wednesday, 16 January 2019 10:26 AM
To: Emile Esquire <emile@enviroafrica.co.za>
Subject: RE: Initial Invitation to Register as I&APs: Proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipali

Good morning,

Thank you for notifying SAHRA of the proposed development. Please note that all development applications are processed via our online portal, the South African Heritage Resources Information System (SAHRIS) found at the following link: http://sahra.org.za/sahris/. We do not accept emailed, posted, hardcopy, faxed, website links or DropBox links as official submissions.

Please create an application on SAHRIS and upload all documents pertaining to the Environmental Authorisation Application Process. As per section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA), an assessment of heritage resources must form part of the process and the assessment must comply with section 38(3) of the NHRA.

Once all documents including all appendices are uploaded to the case application, please ensure that the status of the case is changed from DRAFT to SUBMITTED. Please ensure that all documents produced as part of the EA process are submitted as part of the application, and are submitted to SAHRA at the beginning of the Public Review periods. Once all these documents have been uploaded, I will be able to issue an informed comment as per section 38(4) and 38(8) of the NHRA.

Kind regards,

From: Emile Esquire <emile@enviroafrica.co.za>
Sent: Tuesday, January 15, 2019 2:53 PM
To: mm@kaigarib.gov.za; mayor@kaigarib.gov.za; finiesd@gmail.com; 'JacolineMa' <JacolineMa@daff.gov.za>; AbrahamsA@dws.gov.za; shibambus@dws.gov.za; 'Schwartz Chantel (UPN)' <SchwartzC@dws.gov.za>; 'TTshimakwane' <Ttsimakwane@ncpg.gov.za>; 'ORiba' <ORiba@ncpg.gov.za>; 'Ordain Riba' <oriba.denc@gmail.com>; sylvia.moholo@dpw.gov.za; Natasha Higgitt <nhiggitt@sahra.org.za>; marinakwgv@isat.co.za; mariuslouw111@gmail.com; minibos@yahoo.com; dewaal@kaigarib.gov.za; dewaali@kaigarib.gov.za
Subject: Initial Invitation to Register as I&APs: Proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality,

Dear Interested and Affected Parties,

Interested and Affected Parties (I&APs) are hereby notified of the application and invited to register (in writing) and/or provide initial comments and identify any issues, concerns or opportunities relating to this project to the contact details provided below, on or before 18 February 2019. In order to register or submit comment, I&APs should refer to the project name, and provide their name, address & contact details (indicating your preferred method of notification) and an indication of any direct business, financial, personal, or other interest which they have in the application. You are also requested to pass this information to any person you feel should be notified. Please note that future correspondence will only be sent to registered Interested and Affected Parties.

Please note that only Registered I&APs:
- will be notified of the availability of reports and other written submissions made (or to be made) to the Department by the applicant, and be entitled to comment on these reports and submissions;
- will be notified of the outcome of the application, the reasons for the decision, and that an appeal may be lodged against a decision; and
- will be notified of the applicant's intention to appeal the decision of the competent authority, together with an indication of where and for what period the appeal submission will be available for inspection.

Consultant: EnviroAfrica CC. P.O. Box 5367, Helderberg, 7135 / Fax: 086 512 0154 / Tel: 021 8511616 / E-mail: admin@enviroafrica.co.za / emile@enviroafrica.co.za

In addition, please find attached notification letter dated 15 January 2019.

Kind regards,

Emile Esquire

Environmental Consultant
EnviroAfrica cc
p: +27 21 851 1616
f: +27 86 512 0154
a: Unit 7, Pastorie Park, Reitz St, Somerset West, 7130
P.O. Box 5367, Helderberg, 7135
w: www.enviroafrica.co.za e: emile@enviroafrica.co.za

INITIAL PPP: PUBLIC PARTICIPATION COMMENTS RECEIVED - PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW COST HOUSING DEVELOPMENT ON PORTION 3O OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROADKAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE					
Date	Comment	I&AP	Project	Response	Respondent
16/01/2019	Good morning, Thank you for notifying SAHRA of the proposed development. Please note that all development applications are processed via our online portal, the South African Heritage Resources Information System (SAHRIS) found at the following link: http://sahra.org.za/sahris/. We do not accept emailed, posted, hardcopy, faxed, website links or DropBox links as official submissions. Please create an application on SAHRIS and upload all documents pertaining to the Environmental Authorisation Application Process. As per section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA), an assessment of heritage resources must form part of the process and the assessment must comply with section 38(3) of the NHRA. Once all documents including all appendices are uploaded to the case application, please ensure that the status of the case is changed from DRAFT to SUBMITTED. Please ensure that all documents produced as part of the EA process are submitted as part of the application, and are submitted to SAHRA at the beginning of the Public Review periods. Once all these documents have been uploaded, I will be able to issue an informed comment as per section 38(4) and 38(8) of the NHRA. Kind regards, Natasha Higgitt	SAHRA	Blaauwskop Housing Development	Dear Natasha, I hereby acknowledge receipt of the department's email correspondence dated 16 January 2019. Please note that I am currently busy compiling the Draft Scoping Report that will go out for public comment in due course. EnviroAfrica appointed UBIQUE Heritage Consultants to conduct the Heritage Impact Assessment (HIA) and will also upload a copy of the Draft Scoping Report with supporting documents onto SAHRIS in due course. I will let you know when the Draft BAR will go out for public comment. Please don't hesitate to contact me should you require any additional information. Kind regards,	EnviroAfrica

KAI !GARIB MUNICIPALITY

9 11th Avenue, Kakamas 8870

WATER USE LICENSE APPLICATION FOR THE PROPOSED URBAN DEVELOPMENT AT BLAAUWSKOP, NORTHERN CAPE

FRESH WATER REPORT

A REQUIREMENT IN TERMS OF SECTION 21 OF THE NATIONAL WATER ACT
MAY 2020

MACROPLAN

EnviroAfrica
Environmental Management and Impact Assessment
Omgewingsbestuur en Impakbeoordeling

watsan AFRICA

Index

Abbreviations

Northern Cape Department: Co-Operative Governance, Human Settlements and Traditional Affairs	COGHSTA
Critical Biodiversity Area	CBA
Department of Water and Sanitation	DWA
Ecological Importance	EI
Ecological Sensitivity	ES
Ecological Support Area	ESA
Environmental Impact Assessment	EIA
Electronic Water Use License Application (on-line)	eWULAA
Government Notice	GN
Hectares	ha
Legal water use	LWU
Metres Above Sea Level	masl
National Environmental Management Act (107 of 1998)	NEMA
National Freshwater Environment Priority Area	NFEPA
National Water Act (36 of 1998)	NWA
Non-government organization	NGO
Present Ecological State	PES
South Africa National Biodiversity Institute	SANBI
Section of an Act of Parliament	S
Water Use License Application	WULA

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1 Introduction

The Barzani Group, on behalf of GOCHSTA, appointed Mr Len Fourie of Macroplan in Upington to produce the plans and lay-out of severlal townships along the Lower Orange River, from Groblershoop to Keimoes and surrounds. The Blaauwskop settlement on the southern bank of the Orange River to the east of Keimoes is one such development.

Macroplan appointed Enviro Africa of Somerset West for the required impact assessment in terms of NEMA, together with the public participation process (Figure 1).

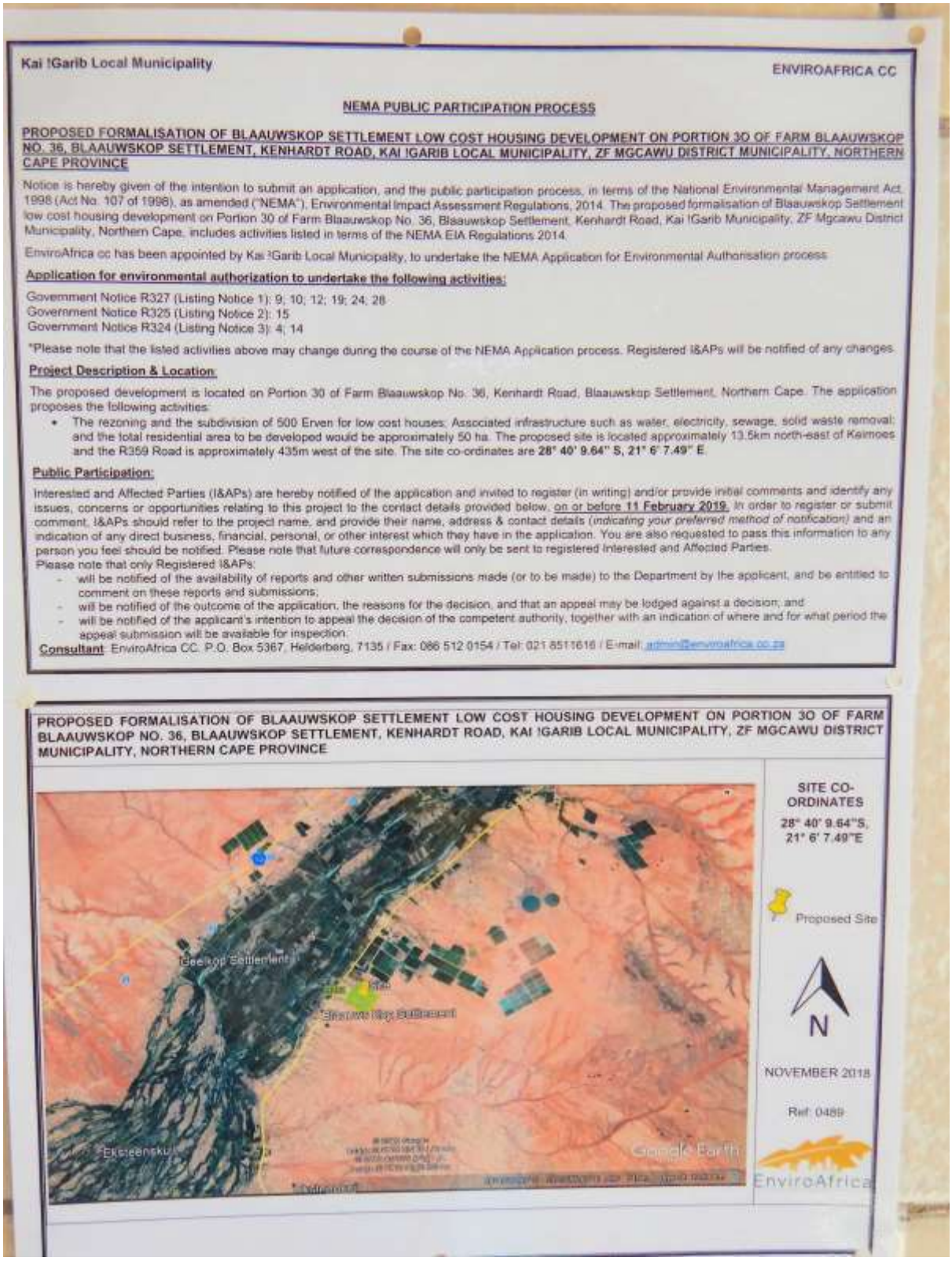
Likewise, Dr Dirk van Driel of WATSAN Africa of Cape Town was appointed to deal with the WULA in terms of the NWA for this envisaged urban development.

The required site visit was conducted on 8 February 2019.

These developments all span mostly dry drainage lines, which are nevertheless regarded as legitimate water resources, for which a WULA is mandatory. Moreover, these development can have an impact on the Orange River water quality. Some of them are adjacent to an irrigation canal, which poses challenges.

The Fresh Water Report must contain adequate information to allow for informed decision-making. The decision to approve the proposed urban development rests with DWS officials, in terms of S21 of the NWA. The Fresh Water Report must contain specified information according to a set profile, which has been developed over a number of years over many such reports and in accordance with GN509. A Risk Matrix is to be completed, as published on the DWA webpage.

In total nine of these reports will have to be produced. This is the last report in this series. For each of these reports, the issues are very much the same, with a similar terrain and social-economic circumstances. Consequently, the reports are the same, being mirror images of one another, but adapted to the specific localities and specific issues for each of the townships.



Kai !Garib Local Municipality

ENVIROAFRICA CC

NEMA PUBLIC PARTICIPATION PROCESS

PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW COST HOUSING DEVELOPMENT ON PORTION 30 OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE

Notice is hereby given of the intention to submit an application, and the public participation process, in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended ("NEMA"), Environmental Impact Assessment Regulations, 2014. The proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape, includes activities listed in terms of the NEMA EIA Regulations 2014.

EnviroAfrica cc has been appointed by Kai !Garib Local Municipality, to undertake the NEMA Application for Environmental Authorisation process.

Application for environmental authorization to undertake the following activities:

Government Notice R327 (Listing Notice 1): 9; 10; 12; 19; 24; 28
Government Notice R325 (Listing Notice 2): 15
Government Notice R324 (Listing Notice 3): 4; 14

*Please note that the listed activities above may change during the course of the NEMA Application process. Registered I&APs will be notified of any changes.

Project Description & Location:

The proposed development is located on Portion 30 of Farm Blaauwskop No. 36, Kenhardt Road, Blaauwskop Settlement, Northern Cape. The application proposes the following activities:

- The rezoning and the subdivision of 500 Erven for low cost houses. Associated infrastructure such as water, electricity, sewage, solid waste removal; and the total residential area to be developed would be approximately 50 ha. The proposed site is located approximately 13.5km north-east of Keimoes and the R359 Road is approximately 435m west of the site. The site co-ordinates are **28° 40' 9.64" S, 21° 6' 7.49" E**.

Public Participation:

Interested and Affected Parties (I&APs) are hereby notified of the application and invited to register (in writing) and/or provide initial comments and identify any issues, concerns or opportunities relating to this project to the contact details provided below, on or before **11 February 2019**. In order to register or submit comment, I&APs should refer to the project name, and provide their name, address & contact details (*indicating your preferred method of notification*) and an indication of any direct business, financial, personal, or other interest which they have in the application. You are also requested to pass this information to any person you feel should be notified. Please note that future correspondence will only be sent to registered Interested and Affected Parties.

Please note that only Registered I&APs:

- will be notified of the availability of reports and other written submissions made (or to be made) to the Department by the applicant, and be entitled to comment on these reports and submissions;
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Consultant: EnviroAfrica CC. P.O. Box 5367, Helderberg, 7135 / Fax: 086 512 0154 / Tel: 021 851 1616 / E-mail: admin@enviroafrica.co.za

PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW COST HOUSING DEVELOPMENT ON PORTION 30 OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE

Figure 1 Public participation

2 Legal Framework

The proposed development "triggers" sections of the National Water Act. These are the following:

S21 (c) *Impeding or diverting the flow of a water course*

The proposed development is spanning the banks of a drainage line. A drainage line would be altered, should the development go ahead.

S21 (i) *Altering the bed, bank, course of characteristics of a water course.*

Some part of the proposed development will alter the characteristics of the banks of a drainage line.

Government Notice 267 of 24 March 2017

Government Notice 1180 of 2002. *Risk Matrix.*

The Risk Matrix as published on the DWS official webpage must be completed and submitted along with the Water Use Licence Application (WULA). The outcome of this risk assessment determines if a letter of consent, a General Authorization or a License is required.

Government Notice 509 of 26 August 2016

An extensive set of regulations that apply to any development in a water course is listed in this government notice in terms of Section 24 of the NWA. No development take place within the 1:100 year-flood line without the consent of the DWS. If the 1:100-year flood line flood line is not known, no development may take place within a 100m from a water course without the consent of the DWS. The development is adjacent to drainage lines, which are defined as legitimate water resources.

Likewise, the development triggers a part of the *National Environmental Management Act, NEMA, 107 of 1998).*

The EIA Regulations of 2014 No.1 Activity 12 states that no development may take place within 32m of a water course without the consent of the Department of Environmental Affairs and its provincial representatives. A part of the development is adjacent to drainage lines. Consequently, this regulation is relevant to this application.

This Fresh Water Report is exclusively focussed in S21 (c) and (i) of the NWA

Appendix 6 of GN R926 of 7 April 2017

This Government Notice outlines the minimum requirements of the contents of specialist reports for EIA's.

3 Climate Keimoes

https://www.google.com/search?q=climate+keimoes&rlz=1C1CHZL_enZA722ZA722&sxsrf=ALeKk038hMOZWDPa1PZiv1XlksnzR2Zrbg:1595417143824&tbm=isch&source=iu&ictx=1&fir=CmFbfTQBEpp2hM%252CMIzbhj9dgotX3M%252C_&vet=1&usg=AI4_-kQFYyVIH5MFKkQjI_J12SXuzUPO9Q&sa=X&ved=2ahUKEwil4YCB4ODqAhUSsHEKHQTCAxgQ9QEwEnoECAkQBQ#imgrc=CmFbfTQBEpp2hM

Figure 2 Climate Keimoes

Keimoes, the closest locality to Blaauwskop with on-line climate data, receives only 154mm of rain annually, which leaves the area semi-arid. The rainfall is entirely inadequate for growing crops. The large-scale agriculture in the district is for all its needs dependent on irrigation out of the Orange River. Most of the rain is during summer (Figure 2).

Rainfall often occurs in late afternoon sudden and violent electric thunder storms. Rainfall is highly variable, with occsional high rainfall events, perhaps once in a couple of years. Droughts are common, with dry periods lasting for years. The summers are hot and dry, with midday temperatures often more than 40° centicrade.

4 Location

Figure 3 Location

The location of the project is indicated in Figure 3. It is 30 km to the south west of Upington, as the crow flies, and 13 km east of Keimoes, on the south bank of the Orange River, in the Northern Cape.

5 Vegetation

The South African National Biodiversity Institute (SANBI) indicated the vegetation type on the property as Bushmanland Arid Grassland. The vegetation around the river is indicated as Lower Gariep Alluvial Vegetation. The Orange River is a National Freshwater Ecosystem Priority Area (NFEPA). The riparian area is indicated as Nama Karoo Bushmanland Flood Plain Wetland, despite that most of it today is manicured agriculture.

6 Quaternary Catchment

Blaauwskop is in the D73D quaternary catchment.

7 The Project

The plot of land is indicated in Figure 4 and its coordinates in Table 1.

The plot of land is bordering onto the irrigation canal (Figure 5). This is a prominent feature that will have an impact on the planning and the operation of the site. Houses have been built right to the edge of the canal. At the time of the site visit, children were playing in and around the canal (Figure 6), which is fast flowing, with very steep sides and is dangerous.

The plot is 100ha in size and 1500 erven with dwellings are envisaged, together with urban infrastructure. On the last count during the site visit, approximately 170 existing dwellings were recorded (Figure 7). The construction of new informal houses is ongoing.

Figure 4 Portion 36, Farm Blaauwskop

Table 1 Coordinates Portion 36 Farm Blaauwskop

Point	Coordinates
A	28°39’52.13S 21°06’04.24”E
B	28°40’10.69S 21°05’50.89”E
C	28°40’23.81S 21°06’12.90”E
D	28°40’05.51S 21°06’26.80”E

Figure 5 Irrigation canal

Figure 6 Children at irrigation canal

Figure 7 Dwellings

8 Drainage Lines

The landscape around much of the Lower Orange River as well as the Sak and Hartbees River is dominated by a dense succession of drainage lines. They spread along the river with many smaller tributaries to cover the entire area. The iron oxides in the sands renders a red hue that is visible from space on the Google Earth images. These reds are concentrated in the drainage lines, making them even more visible (Figure 8).

The drainage lines are mostly dry, with water only during rains and perhaps shortly thereafter. During the odd thunder storm, drainage lines can come down in flood. These floods maintain the drainage line's morphological integrity, as sediments are moved and these water ways are scoured out.

Because rainfall events are far apart, the drainage lines must have been form over millennia, even since geological times.

Around the Orange River and even the Sak and Hartbees River, large-scale agriculture has changed the drainage lines into drainage channels among the vineyards and orchards. The upper reaches away from the rivers are less impacted, even near-pristine, as intense agriculture is not possible, apart from those areas where water is piped over long distances from the Orange River.

Much of the discussion in this report is about these drainage lines.

9 Sub-Catchments

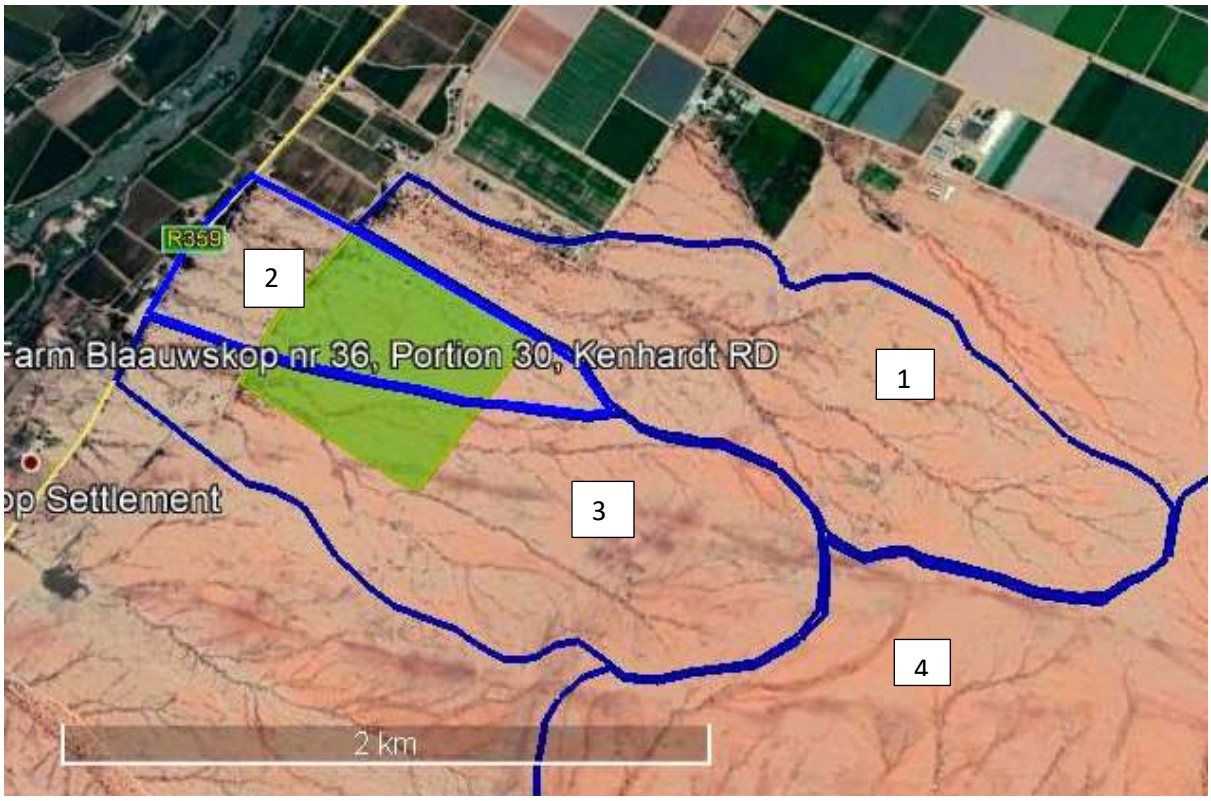


Figure 8 Catchment areas

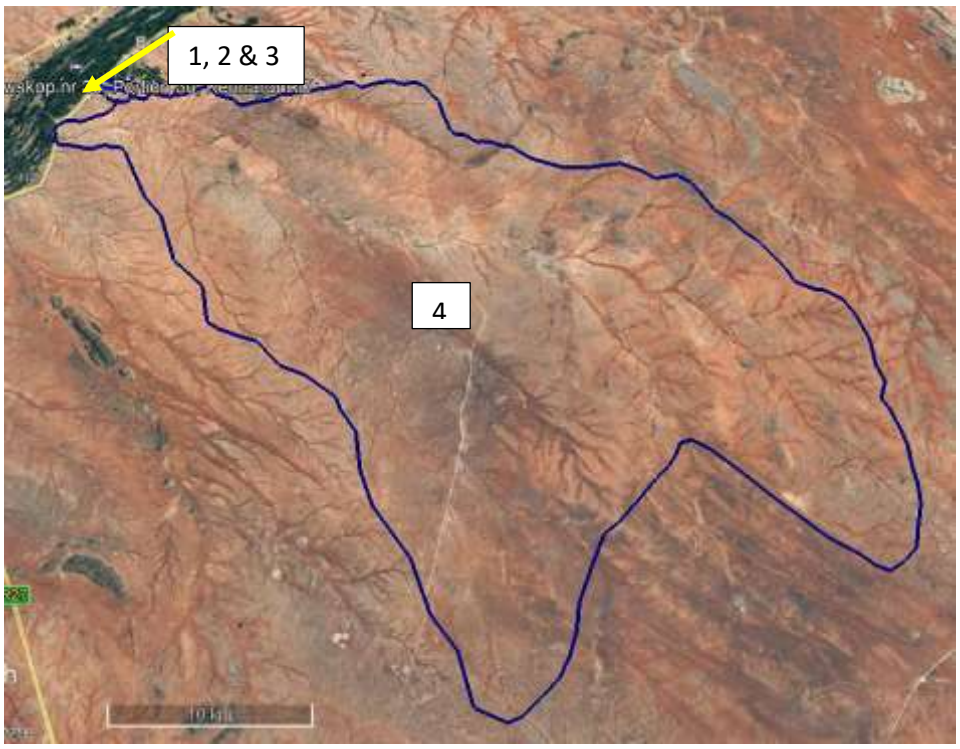


Figure 9 Larger sub-catchment

Table 2 Sub-catchments

No	Area Ha	Circumference km	Highest Point masl	Lowest Point masl	Distance km	Slope
1	156	6.6	818	776	2.9	1.45
2	145	5.7	776	769	1.6	0.43
3	62	3.8	809	770	2.45	0.02
4	89380	153	1021	758	55	>0.01

There are three very small sub-catchments span the block of land that has been earmarked for development (Figure 8, Table 2). These each have a small drainage line that end up against the vineyards.

The fourth sub-catchment is, at almost 90 000 hectares, by far the largest, but it does not span the development area and is adjacent to it, bordering onto it (Figure 9, Table 2).

The slope of sub-catchment 1 (Figure 8) is rather steep, with a drop of 1.45m over a distance of 100 horizontal metres. This slope, together with sandy soils, is normally enough reason to be careful of erosion during high rainfall events and calls for proper planning of a storm water system in this part of the development. In this case, this is a low rainfall area and the sub-catchments are very small, which negates the need for large storm water management infrastructure.

The slope of sub-catchment 2 is far less, with only 0.43m drop over 100m, with the slope in sub-catchment 3 being insignificant, with virtually level land with probably a very slow runoff rate.

The largest sub-catchment is entirely level (Table 1). The slope is the steepest at the high end of the sub-catchment and tapers off towards the middle and lower end. Like so many other similar sub-catchments in the region, sand is eroded from the higher parts and subsequently deposited lower down to create a wide flood plain that can readily be seen on Google Earth images (Figure 8). The tree lines on these wide flood plains are wider, probably because the ground water migrating down the drainage lines in the sands, albeit sparse, spread out over a wider area.

The larger sub-catchment connects to the Orange River downstream of Blaauwskop with a prominent canal through the vineyards (Figure 9).

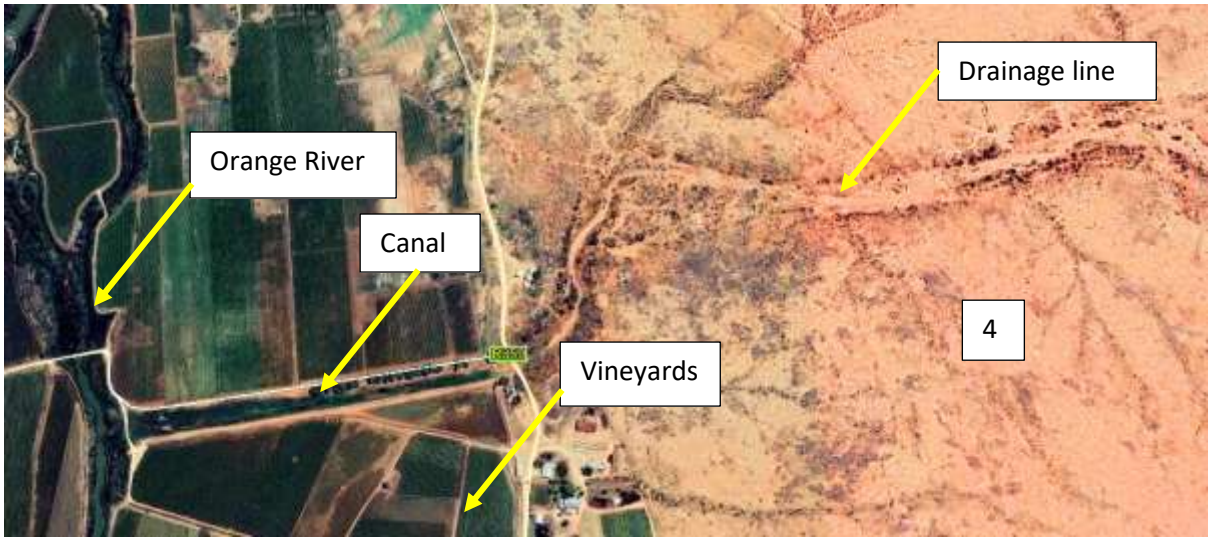


Figure 10 Larger drainage line canal

Figure 11 Drainage line in sub-catchment 1

10 Blaauwskop Drainage lines

The mostly dry drainage lines in sub-catchment 2 and 3 run right through the existing housing, with houses located on the banks, without any buffer zone (Figure 11).

The drainage lines were full of litter and household waste during the site visit.

The drainage lines pass over the irrigation canal. Concrete slabs have been constructed over the canal at each of the crossings, with concrete walls on either side of the crossing to keep storm water from entering the canal (Figure 12, 13 and 14).

Figure 12 Crossing No. 1

Figure 13 Crossing No.2

Figure 14 Crossing No. 3

It is expected that a number more of these crossings will have to be constructed, as the new development progresses, to keep runoff and litter out of the irrigation canal.

The drainage lines appear to be fairly natural on both sides of these crossings, with mostly swarthaak trees (*Senegalia mellifera*), as well as the invasive *Prosopis* trees being the riparian vegetation (Figure 15). The beds were mostly sandy, with little if any vegetation.

Figure 15 Drainage line vegetation

The drainage lines and surrounds were grazed by goats and other livestock.

11 Impacts on the Lower Orange River

The river is heavily utilized for agriculture, with the banks entirely modified into cultured vineyards. A multitude of large electric water pumps have been placed in the river for abstracting large volumes of water for irrigation. Abstraction significantly lowers the flow in the river.

Berms for the purpose of flood protection have been constructed on the banks of the river for most of its length. These berms have been constructed by the Department of Water Affairs and now have been a feature of the landscape for many decades. The berms keep flood water out of adjacent agricultural land and has denaturalised the riparian zone.

The single most impact on the Orange River are the two very large dams, The Gariep Dam and the Vanderkloof Dam. The river flow has been modified to a much more even regime, different from the varied flown with high peak flows and low drought flows.

The Lower Orange River is lined with a dense system of mostly dry drainage lines. These drainage lines only flow during and shortly after heavy rains. Their contribution to the flow of the Orange River is insignificant. Most of the flow comes from the Lesotho Highlands and some from the Vaal River. However, many of these drainage lines have been transformed into engineered agricultural return flow furrows that carries the excess of over irrigation back to the Orange River. Agricultural return flow adds much to the nutrient load of the Orange River because runoff contains fertilizer. Nitrogen is added in large quantities. Since phosphorus readily binds to the soil, not much phosphorus is added.

Return flow can contain a heavy silt load, thereby elevating turbidity in the river.

It is suspected that pesticides in agricultural return flow have a heavy impact on biomonitoring results, significantly reducing the SASS5 score.

The banks of the Orange River in the area is densely overgrown with Spaanse Riet (*Arundo donax*). This is classified as an aggressive and exotic invasive plant, which effectively prevents access to the river. The reeds result in a homogeneous aquatic habitat. This lack of variation supresses the SASS5 score, with only a limited number of aquatic macroinvertebrate species present in this habitat.

The impact of concern for this particular WULA is the return flow out of urban areas, of which Upington is the most significant, with its release of treated sewage effluent into the Orange River. In addition, a number of human settlements similar to Blaauwskop are being planned, where existing wastewater treatment works are inoperable and where these works are absent. This poses a threat to the water quality of the Orange River and of course a threat to the regional agricultural export industry. Hence it is necessary to monitor the Orange River, within the typical cost structure and timespan of a WULA. Biomonitoring seems to be the indicated option.

12 Biomonitoring the Lower Orange River

The biomonitoring was carried out according to the description of Dickens & Graham (2002).

Biomonitoring was carried out on the Lower Orange River during site visits for successive WULAs. So far 12 samples have been analyzed at 11 localities (Table 3). The site furthest east was at Hopetown and furthest west at Augrabies, with Upington in the middle. All of these are located upstream of the Augrabies Falls.

Another sample was analyzed at Styerkraal just east of the border post of Onseepkans downstream of the Augrabies Falls.

The river is mostly braided, with many smaller streams and with islands in the middle. The river sports many rapids and riffles, but also pool-like features where the river is broad and slower flowing.

The bottom is mainly muddy, with some large rocky outcrops in the middle of the river.

13 Lower Orange River Biomonitoring Results

The biomonitoring results have been captured in Table 1 and depicted in Figure 17.

The classes from A to F in Figure 18 has been assigned for mature rivers on flood plains such as the Lower Orange River.

Only 2 of the samples were classified a good and relatively unimpacted (Class A). Four were in Class B and C, which can be regarded as acceptable under the circumstances of an impacted river reach. These classes can possible be labelled as the ideal, a compromise between agriculture and aquatic ecological functioning.

Four samples were poor (Classes E and F), an undesirable state of affairs.

The one sample downstream of the Augrabies Falls was extremely poor.

Table 3 Biomonitoring in the Lower Orange River

Locality	Coordinates	Date	SASS 5	No Taxa	ASPT
Augrabies Lair trust	28°38'41.53S 20°26'08.49E	5/09/17	18	4	4.5
Augrabies Lair Trust	28°38'41.53S 20°26'08.49E	5/10/17	43	9	4.8
Groblershoop	28°52'31.80S 21°59'13.49E	14/8/18	41	7	5.9
Kakamas Triple D	28°45'08.37S 20°35'06.16E	15/8/18	50	9	5.6
Hopetown Sewer	29°36'05.07S 24°06'05.00E	7/10/18	29	7	4.1
Hopetown Sewer	29°36'08.06S 24°21'06.16E	7/10/18	29	8	3.6
Keimoes Housing	28°42'37.12S 20°55'07.81E	8/02/19	51	7	7.3
Upington Erf 323	28°27'11.91S 21°16'14.02E	12/2/19	56	9	6.2
Upington Affinity	28°27'11.91S 21°16'14.02E	20/5/19	54	9	6
Styerkraal	28°27'25.28S 21°15'01.87E	21/5/19	15	6	2.5
Grootdrink Bridge	28°17'15.30S 21°03'50.87E	17/5/20	34	7	5.3
Turksvy Dam	28°27'09.21S 21°17'20.72E	17/5/20	69	13	5.3

14 Biomonitoring sampling point

The sampling point should be chosen as close as possible and just downstream of a possible impact. In the case of Blaauwskop, this was not possible, because the Orange River was heavily overgrown with reeds, an impenetrable barrier (Figure 16). The closest point at the time was in Upington, Erf 323 as indicated in Table 1.

The river here was approximately 150m wide, pool-like with a slow current of some $0.1m^{-s}$ in the middle of the river but only $0.02m^{-s}$ next to the river bank at the sampling point. The *Phragmitis* reeds here were cleared to accommodate a floating jetty and a pump for the abstraction of water. At this point there was a sturdy concrete slipway for the launching of boats. There was a lot of froth and debris in the shallow water. The river was turbid at the time.

This site was right on the verge of the 4m high flood wall, of which there are many kilometres along both banks of the Lower Orange River. The bank was steep, with the submerged bank steep as well, with limited shallow water.

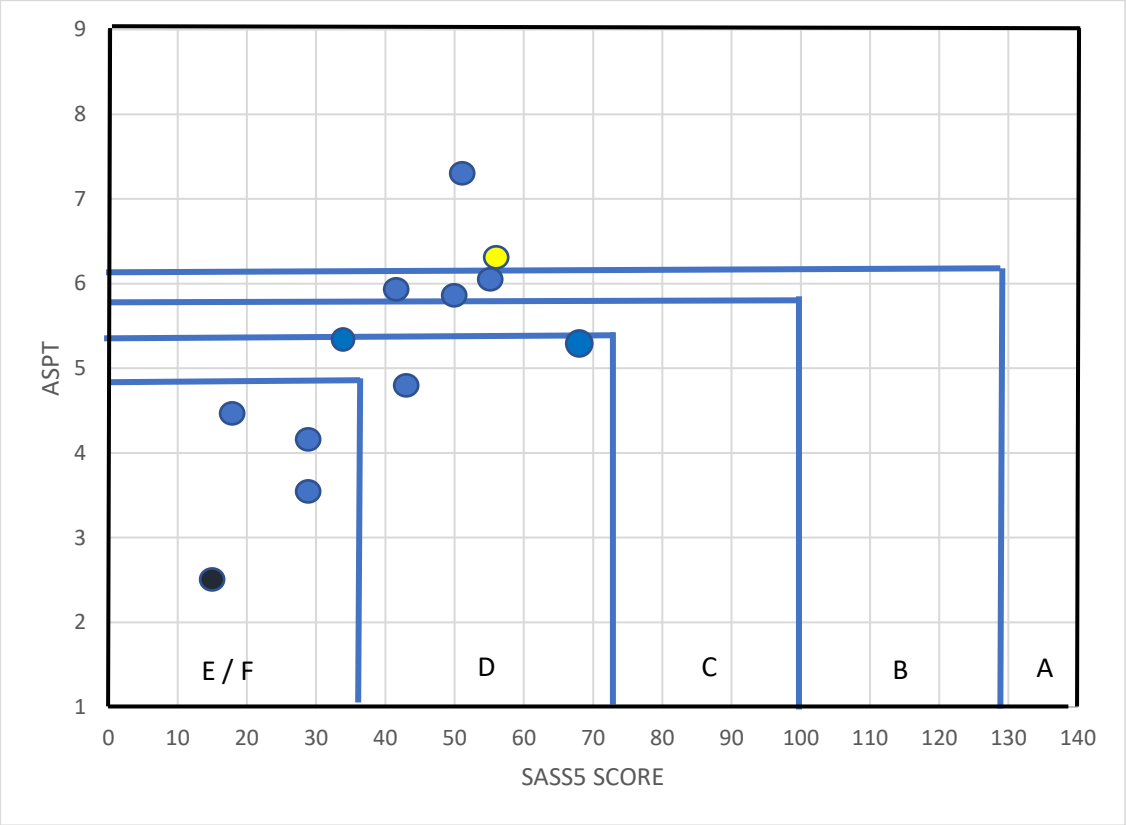
The available habitat was submerged vegetation, emerging vegetation muddy bottom and the jetty served as bedrock.

The biomonitoring results are given in the Appendix.

The results were surprisingly good (Figure 17), indicating a near-pristine, almost unimpacted state of the river. This is above the target ("C", impacted, but with most ecological functioning intact).

The impacts from all of the new housing developments, including Blaauwskop, should be managed to such an extent that the Orange River does not drop below a C class.

Figure 16 Reeds



Integrity Class	Description
A	Pristine; not impacted
B	Very Good; slightly impacted
C	Good; measurably impacted with most ecological functioning intact
D	Fair; impacted with some loss of ecological functioning
E	Poor; loss of most ecological function
F	Very Poor; loss of all ecological function

Figure 17 Lower Orange River biomonitoring results

The yellow dot represents the sampling point in Upington. All the other dots represent previous sampling.

15 **Present Ecological State** (PES)

Table 4 Habitat Integrity according to Kleynhans, 1999

A	Unmodified, natural	90 – 100
B	Largely natural with few modifications. A small change in natural habitats and biota, but the ecosystem function is unchanged	80 – 89
C	Moderately modified. A loss and change of the natural habitat and biota, but the ecosystem function is predominantly unchanged	60 – 79
D	Largely modified. A significant loss of natural habitat, biota and ecosystem function.	40 – 59
E	Extensive modified with loss of habitat, biota and ecosystem function	20 – 39
F	Critically modified with almost complete loss of habitat, biota and ecosystem function. In worse cases ecosystem function has been destroyed and changes are irreversible	0 - 19

The PES and EIS are protocols that have been produced by Dr Neels Kleynhans (Table 4 to 7) in 1999 of the then DWAF to assess river reaches. The PES is one of the evaluations that is prescribed for S21 (c) and (i) WULA's. The scores given are solely that of the practitioner and are based on expert opinion.

Sub-catchments 1, 2 and 3 have been lumped because they were very similar. They all score a D, very much altered, with much of the ecological functioning lost.

Sub-catchment 4 has been evaluated separately because it is much bigger, not in the township, with a proportionate smaller lower reach that has been canalised. This sub-catchment is less impacts, in a better state and scores a C for both the instream and riparian habitat, with most of the ecological functioning still intact.

Table 5 Present Ecological State of the Drainage Line 1, 2 and 3

Instream	Score	Weight	Product	Maximum score
Water abstraction	24	14	336	350
Flow modification	13	13	169	325
Bed modification	14	13	182	325
Channel modification	15	13	195	325
Water quality	16	14	224	350
Inundation	14	10	140	250
Exotic macrophytes	20	9	180	225
Exotic fauna	12	8	96	200
Solid waste disposal	10	6	60	150
Total		100	1402	2500
% of total			56.1	
Class			D	
Riparian				
Water abstraction	24	13	312	325
Inundation	14	11	154	275
Flow modification	13	12	156	300
Water quality	16	13	208	325
Indigenous vegetation removal	14	13	182	325
Exotic vegetation encroachment	20	12	240	300
Bank erosion	20	14	280	350
Channel modification	15	12	180	300
Total			1142	2500
% of total			45.7	
Class			D	

Table 6 Present Ecological State of Drainage Line 4

Instream	Score	Weight	Product	Maximum score
Water abstraction	24	14	336	350
Flow modification	23	13	299	325
Bed modification	22	13	286	325
Channel modification	21	13	273	325
Water quality	20	14	280	350
Inundation	21	10	210	250
Exotic macrophytes	20	9	180	225
Exotic fauna	18	8	144	200
Solid waste disposal	20	6	120	150
Total		100	1958	2500
% of total			78.3	
Class			C	
Riparian				
Water abstraction	24	13	312	325
Inundation	21	11	143	275
Flow modification	23	12	144	300
Water quality	20	13	195	325
Indigenous vegetation removal	19	13	156	325
Exotic vegetation encroachment	20	12	252	300
Bank erosion	22	14	266	350
Channel modification	21	12	168	300
Total			1636	2500
% of total			65.4	
Class			C	

Much has been published on the ecological state of South African rivers and the Orange River is no exception. In fact, it seems somewhat arrogant to assess the Lower Orange River, even at the sampling point, with a team of one and with the financial backing of a single WULA. This is a large undertaking that is to be contemplated by a team of experts. Nevertheless, this is what the WULA requires.

The river at the Upington sampling point, as elsewhere, has been impacted by major dams, large-scale water abstractions, an influx of agricultural chemicals, encroachment of reeds and exotic macrophytes, translocated and exotic fish, levees, bridges and many other infarctions.

Table 7 Present Ecological State Orange River

Instream	Score	Weight	Product	Maximum score
Water abstraction	15	14	210	350
Flow modification	15	13	195	325
Bed modification	20	13	260	325
Channel modification	22	13	286	325
Water quality	15	14	210	350
Inundation	12	10	120	250
Exotic macrophytes	18	9	162	225
Exotic fauna	15	8	120	200
Solid waste disposal	20	6	120	150
Total		100	1593	2500
% of total			63.7	
Class			C	
Riparian				
Water abstraction	15	13	195	325
Inundation	14	11	154	275
Flow modification	15	12	180	300
Water quality	15	13	195	325
Indigenous vegetation removal	15	13	195	325
Exotic vegetation encroachment	15	12	180	300
Bank erosion	20	14	280	350
Channel modification	18	12	216	300
Total			1595	2500
% of total			63.8	
Class			C	

However, the river at Upington was less impacted than further downstream, as at Kakamas. The river at Upington was stronger flowing, with much more water. The condition of the river gradually deteriorates as water abstraction and return flows increases downstream.

Hence the river was scored a C (Table 4), which signifies that it has been impacted, but despite these impacts still exhibits appreciable ecological functioning. The riparian zone scores a C as well.

There is a good chance that other practitioners would score the river very much the same.

Importantly, the proposed development at Blaauwskop is not about to change the PES of the Orange River at Upington.

16 Ecological Importance

The Ecological Importance (EI) is based on the presence of especially fish species that are endangered on a local, regional or national level (Table 8).

There are no fish in the drainage line, as there is no permanent water. According to this assessment, which is prescribed for WULA's, the drainage line is not important.

No other endangered species, either plant or animal, were detected in or near the drainage line.

Table 8 Ecological Importance according to endangered organisms (Kleynhans,1999).

Category	Description
1	One species or taxon are endangered on a local scale
2	More than one species or taxon are rare or endangered on a local scale
3	More than one species or taxon are rare or endangered on a provincial or regional scale
4	One or more species or taxa are rare or endangered on a national scale (Red Data)

As has been stated before, the higher vegetation in and around the drainage lines are of particular importance in these arid regions and add significantly to biodiversity. These should be considered as ecologically important.

The Orange River is most important, according to this assessment.

According to Skelton (1993) 12 species of indigenous fish occur in the Lower Orange River. Since 2011 another one was added, as well as 3 exotic species. These are the following:

Barbus trimaculatus
B paludinosus
B. hospus
Labeobarbus kimberleyensis (Near threatened)
L aenus
Labeo umbratus
L capensis
Austroglanis sclateri (Widespread elsewhere)
Clarias gariepinus
Pseudocrenilabrus philander (Threatened locally but abundant elsewhere)
Pseudobarbus quathlabae
Mesobola brevianalis (critically endangered)

Exotic and translocated fish:

Cyprinus carpio
Tilapia sparrmanii
Oreochromus mossambicus

Those in blue are endangered to a varying extent. Those indicated in red are exotic or translocated fish.

The only one that causes real concern in the largemouth yellow-fish *Labeobarbus kimberleyensis*. It is endemic to the Orange River system and hence is threatened not only on a local scale, but on a national scale as well. This puts the Lower Orange in category 4. This renders the Orange River as important.

According to the owners of the Kalahari River and Safari Co. along the northern bank of the Orange River on the Riemvasmaak Road, mature blue kurper *Oreochromus mossambicus* are regularly captured in increasing numbers. It now takes at least 4 man-days to capture a single yellow fish.

Yellow fish are generally infected with cestode bladder worms, while darters (*Anhinga rufa*) that predate on these fish are heavily infected with tape worms. It seems as if the translocated Tilapia are not affected by these parasites.

According to Mr Chris van der Post, a renown angling guide and the owner of the Gkhui Gkhui River Lodge near Hopetown, there are still many smallmouth-yellow fish around, but largemouth yellow-fish are scarce.

17 Ecological Sensitivity

Ecological Sensitivity (ES) is often described as the ability of aquatic habitat to assimilate impacts. It is not sensitive if it remains the same despite of the onslaught of impacts. Put differently, sensitive habitat changes substantially, even under the pressure of slight impacts.

The Ecological Sensitivity also refers to the potential of aquatic habitat to bounce back to an ecological condition closer to the situation prior to human impact. If it recovers, it is not regarded as sensitive.

17.1 Ecological Sensitivity Drainage Lines

The question arises**,** according to the ES definition, if the drainage lines would recover to its original ecological state prior to any human impact. If the roads and vineyards, along with the rubble and trash be removed, would the drainage line recover? The answer is probably yes, even though the drainage lines would find new routes and even though it would take many decades, perhaps more than a century, in this semi-arid region where re-growth of vegetation can take a long time. However, this is not a realistic scenario. Development is here to stay, together with its impacts. From this point of view the drainage line can be considered as ecologically sensitive.

17.2 Ecological Sensitivity Orange River

The Lower Orange River has absorbed numerous and deep-cutting human impacts. Yet is still functions as an aquatic ecosystem. In the highly improbable event of ceased human impact, the river here would probably bounce back to its previous glory. In this respect the river cannot be categorised as sensitive. It is dreaded among conservation minded people that the Lower Orange River might have some more capacity to absorb further impact.

18 Possible Impacts

The impacts on sub-catchments 2 and 3 are going to be the greatest, as the township will be built right over these drainage lines.

Drainage lines of sub-catchments 1 and 4 are adjacent to the new development and would be spared of houses right on its banks.

The impacts include trampling and over-grazing of the sub-catchment, destruction of the drainage lines, littering and the danger of untreated sewage ending up in the drainage canal and the Orange River.

19 Mitigation Measures

A buffer zone of 20m should be allowed on either side of these drainage lines, a green zone through the envisaged township.

The township should be arranged in such a way that the drainage lines still connect to the stormwater infrastructure over the irrigation canal. Stormwater should not be allowed to enter the irrigation canal. Where necessary, additional infrastructure should be built over the irrigation canal.

Litter and household waste have been noted in the drainage lines of the existing township. This problem, if not properly managed, will escalate when the township expands. Litter and waste should not be allowed to enter the canal. It should not be allowed to wash down the drainage lines and into the Orange River. Infrastructure to catch the waste should be installed and these structures should be regularly cleaned.

Another 1500 households would put strain on the current sewage and wastewater handling system. It would be disastrous if sewage ends up in the Orange River. Proper planning and infrastructure are necessary.

The three smaller sub-catchments can probably not produce enough runoff, even during a large rainfall event, to pose a threat to the new development. The larger sub-catchment of almost 90 000 ha is large enough to produce a sudden and dangerous pulse of runoff during a high rainfall event, perhaps of 30 to 40mm in a day. Residents should be aware of the potential hazard.

The authorities will have to give the dangers of children in and around the irrigation canal some thought, because the danger of drownings increases as the township grows.

20 Impact Assessment

Some of the decision-making authorities prescribe an impact assessment according to a premeditated methodology (Table 23.1, Appendix).

The main benefit of this exercise is that it allows for the evaluation of mitigation measures. Later follows the Risk Matrix. This is different from the Impact Assessment as it does not attempt to weigh the success of mitigation measures.

The assessment indicates that the impacts are acceptable, provided that the mitigation measures are adequate to contain these impacts (Table 6).

Table 9 Impact Assessment

Description of impact Construction phase. Destruction of drainage lines **Mitigation measures** Construction only during the dry season, limit the foot print, vegetate disturbed areas. Maintain buffer zone Keep building rubble and sediments out of drainage lines. Connect drainage lines to storm water infrastructure over irrigation canal								
Type Nature	Spatial Extent	Severity	Duration	Significance	Probability	Confidence	Reversibility	Irreplaceability
Without mitigation								
Cumulative	Regional	Medium	Long term	Medium	Probable	Certain	Reversible	Replaceable
With mitigation measures								
Cumulative	Local	Low	Long term	Low	Unlikely	Sure	Reversible	Replaceable

Description of impact Operational phase. Litter and sewage into the drainage lines and Orange River **Mitigation measures** Assure a proper municipal litter and urban waste collection and removal system Install adequate wastewater treatment facility and infrastructure								
Type Nature	Spatial Extent	Severity	Duration	Significance	Probability	Confidence	Reversibility	Irreplaceability
Without mitigation								
Cumulative	Regional	Medium	Long term	Medium	Probable	Certain	Reversible	Replaceable
With mitigation measures								
Cumulative	Local	Low	Long term	Low	Unlikely	Sure	Reversible	Replaceable

These mitigation measures can be effective, but only if municipal services are maintained.

21 Risk Matrix

The purpose of the Risk Matrix is to determine if a General Authorisation of a License is applicable.

The assessment was carried out according to the interactive Excel table that is available on the DWS webpage. Table 10 is a replica of the Excel spreadsheet that has been adapted to fit the format of this report. The numbers in Table 10 (continued) represent the same activities as in Table 9, with sub-activities added.

The methodology is tabled in the Appendix.

Table 10 Risk Matrix

No.	Activity	Aspect	Impact	Significance	Risk Rating
1	Construction	Sediments / debris washing down the drainage lines	Silting up of drainage line	26	Low
2	Wastewater / sewage	Sewage ending up in the drainage line and the Orange River	Pollution of the river	54	Low
3	Urban solid waste	Waste ending up in the drainage line and in the river	Pollution of drainage line and Orange river	48	Low

Table 10 Continued Risk Rating

No	Flow	Water Quality	Habitat	Biota	Severity	Spatial scale	Duration	Conse-quence
1 2 3	1 1 1	1 2 1	2 1 1	1 2 1	1.25 1.5 1	1 1 1	1 2 2	3.25 4.5 4

No	Frequency of activity	Frequency of impact	Legal issues	Detection	Likelihood	Significance	Risk Rating
1 2 3	1 3 3	1 3 3	5 5 5	1 1 1	8 12 12	26 54 48	Low Low Low

Values have been given under the Assumption that mitigation measures will be in place.

The risk of material importance is the possibility of urban waste and untreated sewage down the drainage line and into the Orange River. The risk increases because of the cumulative risks posed by the various developments along the reach of the Orange River. It is supposed that if the contamination in the river rises and the farming community becomes aware of it, that there would be a strong reaction, leading to curbing or ending the problem. This assumption influenced the score for “duration”, as the problem was perceived not to continue.

In most cases loosened soil and silt that can be washed down the drainage lines during construction are considered to be a risk to the aquatic environment. In the event of the Blaauwskop development, the risk is so small that it is not worth considering in a Risk Matrix.

The Risk Matrix indicates that the risks to the aquatic environment are low. A General Authorisation should be in order for this application and a License is deemed not to be the indicated level of authorisation.

22 Resource Economics

Table 11. Goods and Services three smaller drainage lines

Goods & Services	Score Smaller drainage lines	Score larger drainage line
Flood attenuation	2	5
Stream flow regulation	2	5
Sediment trapping	2	5
Phosphate trapping	1	3
Nitrate removal	1	3
Toxicant removal	1	2
Erosion control	1	5
Carbon storage	1	3
Biodiversity maintenance	2	5
Water supply for human use	0	0
Natural resources	0	2
Cultivated food	1	2
Cultural significance	0	2
Tourism and recreation	0	1
Education and research	0	1

0 Low
5 High

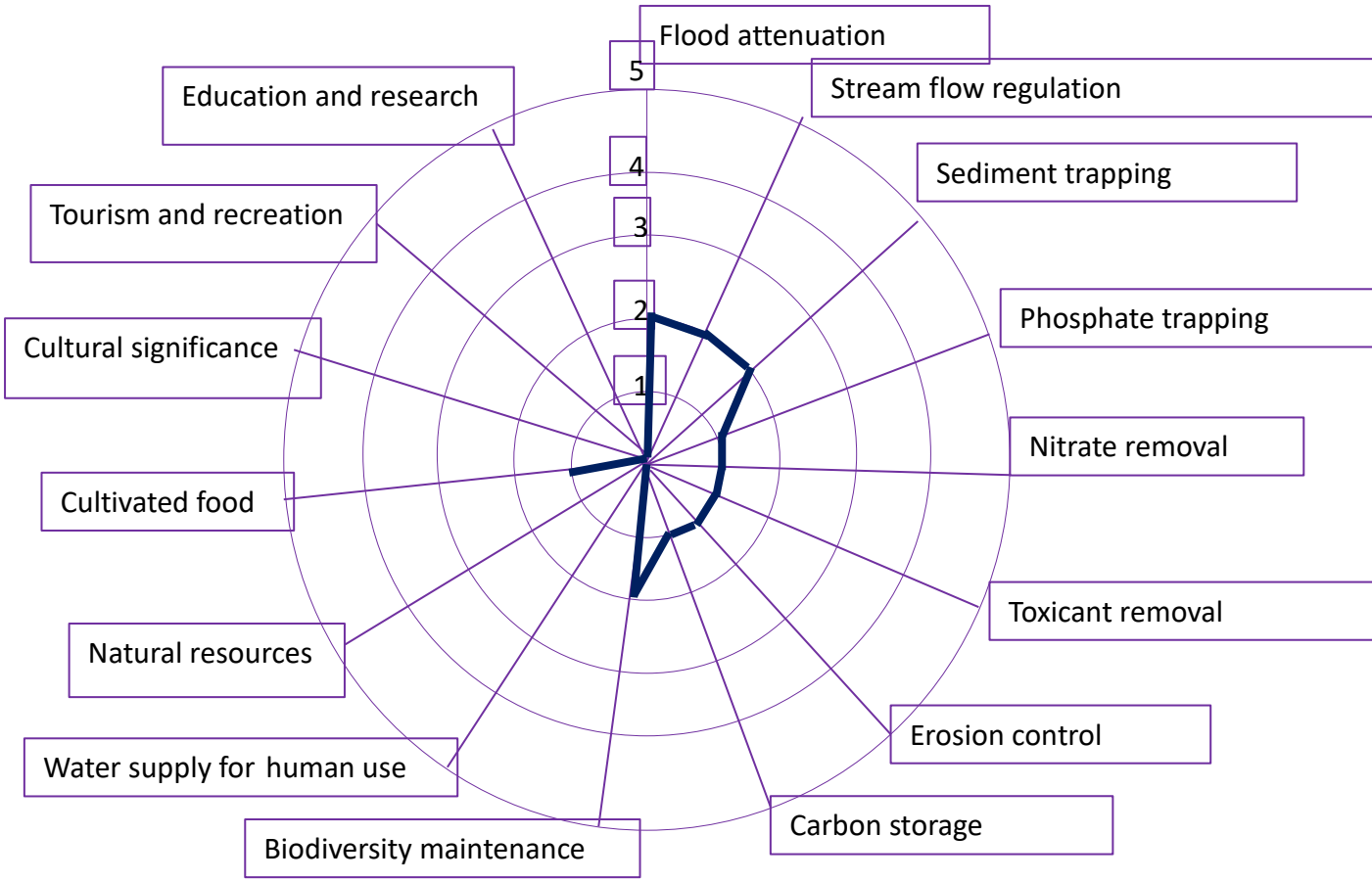


Figure 18 Resource Economic Footprints of the smaller drainage lines

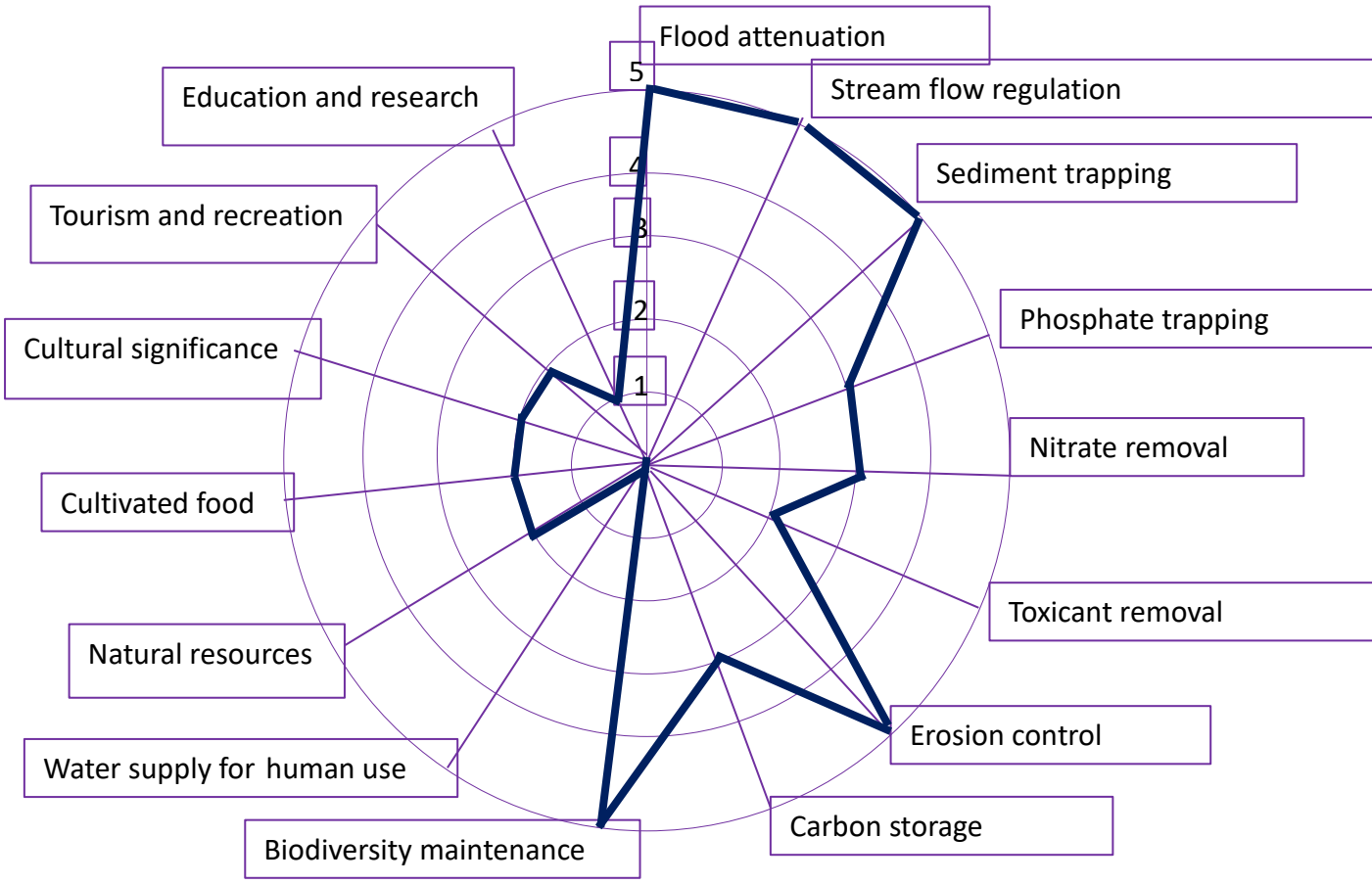


Figure 19 Resource Economic Footprints of the larger drainage lines

The goods and services delivered by the environment, in this case the drainage line at the new Blaauwskop housing development, is a Resource Economics concept as adapted by Kotze *et al* (2009). The methodology was designed for the assessments of wetlands, but in the case of the drainage line the goods and services delivered are particularly applicable and important, hence it was decided to include it in the report.

The diagram (Figure 18 and 19) is an accepted manner to visually illustrate the resource economic footprint the drainage line, from the data in Table 8.

The size of the star shape attracts the attention of the decision-makers. This shape (spider diagram, Figure 18) of the lumped three smaller drainage lines is very small, indicating that the water course has a small economic foot print. If these drainage lines are lost because of development, it won't represent a mentionable loss in environmental goods and services.

However, the larger drainage line renders considerably more economic goods and services and has a significant conservation value, with a much larger star shape (Figure 1).

A large river such as the Orange River renders a full house of goods and services, with a score of 5 for all of them. The spider diagram becomes a perfect circle.

The development at Blaauwskop is not about to change any of this. However, cumulative impacts of many such developments along the Lower Orange River on water quality and long-term water provision for human use and irrigation is the first to come to mind when the considering the future.

23 Site Visits: General Observations

Pertaining to Fresh Water Reports in general, urban wastewater is of importance because untreated waste ends up in water ways, which rebels against the NWA and other contemporary South African environmental legislation. Photographic evidence is presented in several of the nine townships along the Lower Orange River that are now under consideration for expansion where anaerobic pond systems for the treatment of sewage lie idle and are not being utilized for the treatment of urban sewage. Instead raw sewage is dumped in drainage lines. Likewise, several sewage pump stations are dysfunctional, overflowing, with large quantities of raw sewage flowing down drainage lines.

Household solid waste is not collected and removed according to standard municipal operating procedures. Very large quantities of waste accumulate in the townships and the streets. Large quantities of waste end up in the drainage lines as well.

These two aspects are crucial to the WULA and environmental authorisation of any further urban development. If these malpractices are allowed to continue and if the normal municipal services continue to be absent, this untenable situation would become worse when these townships expand.

This is not only a tangible threat to human health and human well-being in the Northern Cape, but in many South African municipalities, as well as in cities elsewhere in the world where WATSAN Africa concluded contracts.

In a number of the townships, graveyards are illegally located right in drainage lines or within the 32m buffer zone from drainage lines.

From a Fresh Water Report perspective, a Licence or General authorisation should probably not be granted until the sewage and waste issues are satisfactory and sustainably resolved. But then this is entirely the prerogative of the DWS and its officials.

24 Conclusions

Figure 20 has been adapted from one of the most recent DWS policy documents.

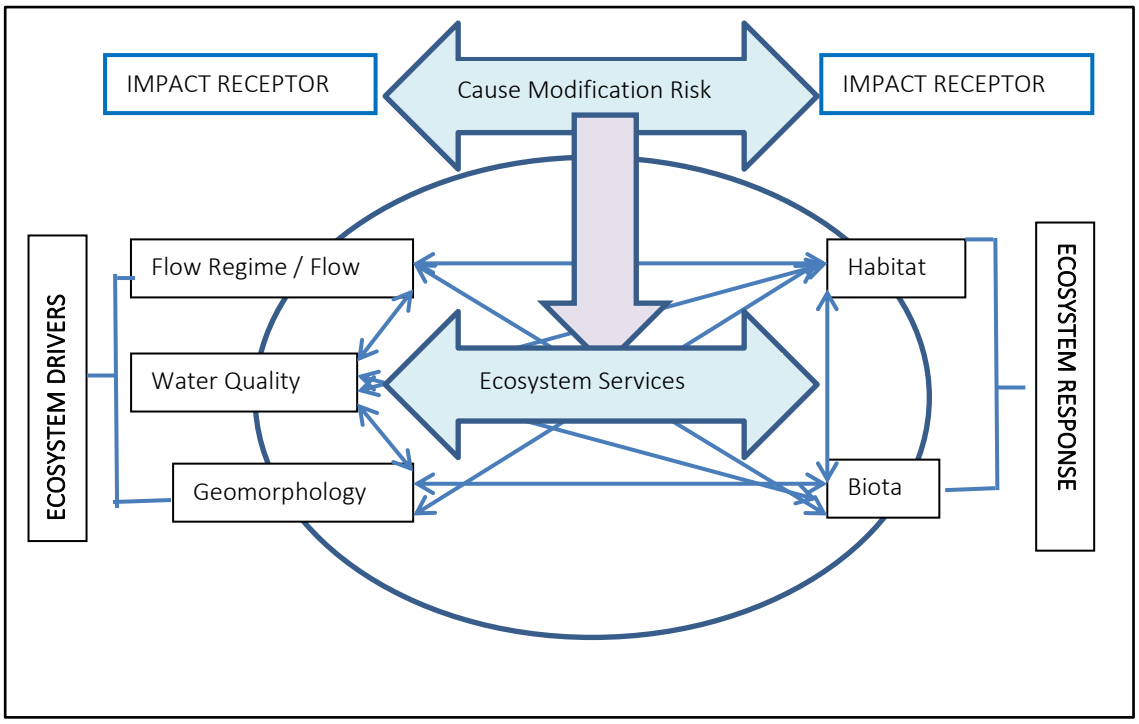


Figure 20 Minimum Requirements for a S21(c) and (i) Application

An anthropogenic activity can impact on any of the ecosystem drivers or responses and this can have a knock-on effect on all of the other drivers and responses. This, in turn, will predictably impact on the ecosystem services (Figure 20). The WULA and the EAI must provide mitigation measured for these impacts.

The driver of the drainage lines is the occasional flood that follows sudden and intense rainfall events. This is followed by prolonged droughts and intense summer heat that prevents the development of any viable aquatic habitat. This is apart from shallow ground water that explains the growth of a somewhat more prolific vegetation along the drainage lines.

The current sewage and solid waste situation are threats to the WULA. The authorities may insist that these issues be resolved before a General Authorization is approved.

Apart from this, the findings of this Fresh Water Report indicate that a general Authorization would be in order for the development of an urban housing scheme at Blaauwskop.

25 References

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26 Declaration of Independence

I, Dirk van Driel, as the appointed independent specialist hereby declare that I:

- Act/ed as the independent specialist in this application
- Regard the information contained in this report as it relates to my specialist input/study to be true and correct and;
- Do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management act;
- Have and will not have vested interest in the proposed activity;
- Have disclosed to the applicant, EAP and competent authority any material information have or may have to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the environmental Impact Assessment Regulations, 2010 and any specific environmental management act.
- Am fully aware and meet the responsibilities in terms of the NEMA, the Environmental Impacts Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R543) and any specific environmental management act and that failure to comply with these requirements may constitute and result in disqualification;
- Have ensured that information containing all relevant facts on respect of the specialist input / study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties facilitated in such a manner that all interested and affected parties were provided with reasonable opportunity to participate and to provide comments on the specialist input / study;
- Have ensured that all the comments of all the interested and affected parties on the specialist input were considered, recorded and submitted to the competent authority in respect of the application;
- Have ensured that the names of all the interested and affected parties that participated in terms of the specialist input / study were recorded in the register of interested and affected parties who participated in the public participation process;
- Have provided the competent authority with access to all information at my disposal regarding the application, weather such information is favourable or not and;
- Am aware that a false declaration is an offence in terms of regulation 71 of GN No. R543.

Signature of the specialist:  26 June 2020

27 Résumé

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Experience

WATSAN Africa, Cape Town. Scientist **2011 - present**

USAID/RTI, ICMA & Chemonics. Iraq & Afghanistan **2007 -2011**
Program manager.

City of Cape Town **1999-2007**
Acting Head: Scientific Services, Manager: Hydrobiology.

Department of Water & Sanitation, South Africa **1989 – 1999**
Senior Scientist

Tshwane University of Technology, Pretoria **1979 – 1998**
Head of Department

University of Western Cape and Stellenbosch University 1994- 1998 part-time

- Lectured post-graduate courses in Water Management and Environmental Management to under-graduate civil engineering students
- Served as external dissertation and thesis examiner

Service Positions

- Project Leader, initiator, member and participator: Water Research Commission (WRC), Pretoria.
- Director: UNESCO West Coast Biosphere, South Africa
- Director (Deputy Chairperson): Grotto Bay Home Owner's Association
- Member Dassen Island Protected Area Association (PAAC)

Membership of Professional Societies

- South African Council for Scientific Professions. Registered Scientist No. 400041/96
- Water Institute of South Africa. Member

Reports

- Process Review Kathu Wastewater Treatment Works
- Effluent Irrigation Report Tydstroom Abattoir Durbanville
- River Rehabilitation Report Slangkop Farm, Yzerfontein
- Fresh Water and Estuary Report Erf 77 Elands Bay
- Ground Water Revision, Moorreesburg Cemetery
- Fresh Water Report Delaire Graff Estate, Stellenbosch
- Fresh Water Report Quantum Foods (Pty) Ltd. Moredou Poultry Farm, Tulbagh
- Fresh Water Report Revision, De Hoop Development, Malmesbury
- Fresh Water Report, Idas Valley Development Erf 10866, Stellenbosch
- Wetland Delineation Idas Valley Development Erf 10866, Stellenbosch
- Fresh Water Report, Idas Valley Development Erf 11330, Stellenbosch
- Fresh Water Report, La Motte Development, Franschhoek
- Ground Water Peer Review, Elandsfontein Exploration & Mining
- Fresh Water Report Woodlands Sand Mine Malmesbury
- Fresh Water Report Brakke Kuyl Sand Mine, Cape Town
- Wetland Delineation, Ingwe Housing Development, Somerset West
- Fresh Water Report, Suurbraak Wastewater Treatment Works, Swellendam
- Wetland Delineation, Zandbergfontein Sand Mine, Robertson
- Storm Water Management Plan, Smalblaar Quarry, Rawsonville
- Storm Water Management Plan, Riverside Quarry
- Water Quality Irrigation Dams Report, Langebaan Country Estate
- Wetland Delineation Farm Eenzaamheid, Langebaan
- Wetland Delineation Erf 599, Betty's Bay
- Technical Report Bloodhound Land Speed Record, Hakskeenpan
- Technical Report Harkerville Sand Mine, Plettenberg Bay
- Technical Report Doring Rivier Sand Mine, Vanrhynsdorp
- Rehabilitation Plan Roodefontein Dam, Plettenberg Bay
- Technical Report Groenvlei Crusher, Worcester
- Technical Report Wiedouw Sand Mine, Vanrhynsdorp
- Technical Report Lair Trust Farm, Augrabies
- Technical Report Schouwtoneel Sand Mine, Vredenburg
- Technical Report Waboomsrivier Weir Wolseley
- Technical Report Doornkraal Sand Mine Malmesbury
- Technical Report Berg-en-Dal Sand Mine Malmesbury
- Wetland Demarcation, Osdrif Farm, Worcester
- Technical Report Driefontein Dam, Farm Agterfontein, Ceres
- Technical Report Oewerzicht Farm Dam, Greyton
- Technical Report Glen Lossie Sand Mine, Malmesbury
- Preliminary Report Stellenbosch Cemeteries
- Technical Report Toeka & Harmony Dams, Houdenbek Farm, Koue Bokkeveld
- Technical Report Kluitjieskraal Sand & Gravel Mine, Swellendam
- Fresh Water Report Urban Development Witteklip Vredenburg
- Fresh Water Report Groblershoop Resort, Northern Cape
- Fresh Water Report CA Bruwer Quarry Kakamas, Northern Cape
- Fresh Water Report, CA Bruwer Sand Mine, Kakamas, Northern Cape
- Fresh Water Report, Triple D Farms, Agri Development, Kakamas
- Fresh Water Report, Keren Energy Photovoltaic Plant Kakamas
- Fresh Water Report, Keren Energy Photovoltaic Plant Hopetown
- Fresh Water Report Hopetown Sewer
- Fresh Water Report Hoogland Farm Agricultural Development, Touws River

- Fresh Water Report Klaarstroom Waste Water Treatment Works
- Fresh Water Report Calvinia Sports Grounds Irrigation
- Fresh Water Report CA Bruwer Agricultural Development Kakamas
- Fresh Water Report Zwartfontein Farm Dam, Hermon
- Statement Delsma Farm Wetland, Hermon
- Fresh Water Report Lemoenshoek Farms Pipelines Bonnyvale
- Fresh Water Report Water Provision Pipeline Brandvlei
- Fresh Water Report Erf 19992 Upington
- Botanical Report Zwartejongensfontein Sand Mine, Stilbaai
- Fresh Water Report CA Bruwer Feldspath Mine, Kakamas
- Sediment Yield Calculation, Kenhardt Sand Mine
- Wetland Demarcation, Grabouw Traffic Center
- Fresh Water Report, Osdrift Sand Mine, Worcester
- Fresh Water Report, Muggievlag Storm Water Canal, Vredenburg
- Fresh Water Report, Marksman's Nest Rifle Range, Malmesbury
- Biodiversity Report, Muggievlak Storm Water Canal, Vredenburg
- Strategic Planning Report, Sanitation, Afghanistan Government, New Delhi, India
- Fresh Water Report, Potable Water Pipeline, Komaggas
- Fresh Water Report, Wastewater Treatment Works, Kamieskroon
- Fresh Water Report, Turksvy Farm Dam, Upington
- Fresh Water Report Urban Development Erf 4440, Kuruman
- Fresh Water Report, Groblershoop Urban Development, IKheis Municipality
- Fresh Water Report, Boegoeberg Urban Development, IKheis Municipality
- Fresh Water Report, Opwag Urban Development, IKheis Municipality
- Fresh Water Report, Wegdraai Urban Development, IKheis Municipality
- Fresh Water Report, Topline Urban Development, IKheis Municipality
- Fresh Water Report, Grootdrink Urban Development, IKheis Municipality
- Fresh Water Report, Gariep Urban Development, IKheis Municipality
- Fresh Water Report, Bonathaba Farm Dam, Hermon
- Botanical Report, Sand Mine Greystone Trading, Vredendal
- Botanical Report, Namakwa Klei Stene, Klawer

28 Appendix

28.1 Biomonitoring results

SASS5 Score Sheet										
Date	12 Feb 19	**Taxon**	**Weight**	**Score**	**Taxon**	**Weight**	**Score**	**Taxon**	**Weight**	**Score**
Locality	Erf 232	Porifera	5		**Hemiptera**			**Diptera**		
	Upington	Coelenterata	1		Belostomatidae	3		Athericidae	10	
		Turbellaria	3		Corixidae	3	3	Blepharoceridae	15	
		Oligochaeta	1		Gerridae	5		Ceratopogonidae	5	
Coordinates	28°27' 11.91"	Huridinea	3		Hydrometridae	6		Chironomidae	2	
	21°16'14.02"	**Crustacea**			Naucoridae	7	7	Culicidae	1	
		Amphipodae	13		Nepidae	3		Dixidae	10	
DO mg/l	6.3	Potamonautidae	3		Notonectidae	3	3	Empididae	6	
Temperature °C	26,7	Atyidae	8	8	Pleidae	4	4	Ephydridae	3	
pH	8.5	Palaemonidae	10		Veliidae	5	5	Muscidae	1	
EC mS/m	25.8	Hydracarina	8		**Megaloptera**			Psychodidae	1	
		Plecoptera			Corydalidae	10		Simuliidae	5	
SASS5 Score	56	Notonemouridae	14		Sialidae	8		Syrphidae	1	
Number of Taxa	9	Perlidae	12		**Trichoptera**			Tabanidae	5	
ASPT	6,2	**Ephemeroptera**			Dipseudopsidae	10		Tipulidae	5	
		Baetidae 1 sp	4	4	Ecnomidae	8		**Gastropoda**		
Other Biota		Baetidae 2 sp	6		Hydropsychidae 1 sp	4		Ancylidae	6	
		Baetidae >3 sp	12		Hydropsychidae 2 sp	6		Bulinidae	3	
	Cyprinus carpio	Caenidae	6		Hydropsychidae <2 sp	12		Hydrobiidae	3	
		Ephemeridae	15		Phylopotamidae	10		Lymnaeidae	3	
		Heptageniidae	13		Polycentropodidae	12		Physidae	3	
		Leptophlebiidae	9		Psychomyidae	8		Planorbidae	3	
		Oligoneuridae	15		**Cased Caddis**			Thiaridae	3	
Comments		Polymitarcyidae	10		Barbarochthonidae	13		Viviparidae	5	
		Prosopistomatida	15		Calamoceratidae	11		**Pelecipoda**		
		Teloganodidae	12	12	Glossostomatidae	11		Corbiculidae	5	
		Trichorythidae	9		Hydroptilidae	6		Sphariidae	3	
		Odonata			Hydrosalpingidae	15		Unionidae	6	
		Calopterygidae	10		Leptostomatidae	10	10			
		Clorocyphidae	10		Leptoceridae	6				
		Chorolestidae	8		Petrothrincidae	11				
		Coenagrionidae	4		Pisulidae	10				
		Lestidae	8		Sericostomatidae	13				
		Platycnemidae	10		**Coleoptera**					
		Protoneuridae	8		Dyticidae	5				
		Aesthnidae	8		Elmidae Dryopidae	8				
		Corduliidae	8		Gyrinidae	5				
		Gomphidae	6		Haliplidae	5				
		Libellulidae	4		Helodidae	12				
		Lepidoptera			Hydraenidae	8				
		Pyralidae	12		Hydrophilidae	5				
					Limnichidae	10				
					Psephenidae	10				
Score				24			32			0

28.2 Methodology used in determining significance of impacts

The methodology to be used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives is provided in the following tables:

Table 26.2.1 Nature and type of impact

Nature and type of impact	Description
Positive	An impact that is considered to represent an improvement to the baseline conditions or represents a positive change
Negative	An impact that is considered to represent an adverse change from the baseline or introduces a new negative factor
Direct	Impacts that result from the direct interaction between a planned project activity and the receiving environment / receptors
Indirect	Impacts that result from other activities that could take place as a consequence of the project (e.g. an influx of work seekers)
Cumulative	Impacts that act together with other impacts (including those from concurrent or planned future activities) to affect the same resources and / or receptors as the project

Table 28.2.2 Criteria for the assessment of impacts

Criteria	Rating	Description
Spatial extent of impact	National	Impacts that affect nationally important environmental resources or affect an area that is nationally important or have macro-economic consequences
	Regional	Impacts that affect regionally important environmental resources or are experienced on a regional scale as determined by administrative boundaries or habitat type / ecosystems
	Local	Within 2 km of the site
	Site specific	On site or within 100m of the site boundary
Consequence of impact/ Magnitude/ Severity	High	Natural and / or social functions and / or processes are severely altered
	Medium	Natural and / or social functions and / or processes are notably altered
	Low	Natural and / or social functions and / or processes are slightly altered
	Very Low	Natural and / or social functions and / or processes are negligibly altered
	Zero	Natural and / or social functions and / or processes remain unaltered
Duration of impact	Temporary	Impacts of short duration and /or occasional
	Short term	During the construction period
	Medium term	During part or all of the operational phase
	Long term	Beyond the operational phase, but not permanently
	Permanent	Mitigation will not occur in such a way or in such a time span that the impact can be considered transient (irreversible)

Table 28.2.3 Significance Rating

Significance Rating	Description
High	High consequence with a regional extent and long-term duration High consequence with either a regional extent and medium-term duration or a local extent and long-term duration Medium consequence with a regional extent and a long-term duration
Medium	High with a local extent and medium-term duration High consequence with a regional extent and short-term duration or a site-specific extent and long-term duration High consequence with either local extent and short-term duration or a site-specific extent with a medium-term duration Medium consequence with any combination of extent and duration except site-specific and short-term or regional and long term Low consequence with a regional extent and long-term duration
Low	High consequence with a site-specific extent and short-term duration Medium consequence with a site-specific extent and short-term duration Low consequence with any combination of extent and duration except site-specific and short-term Very low consequence with a regional extent and long-term duration
Very low	Low consequence with a site-specific extent and short-term duration Very low consequence with any combination of extent and duration except regional and long term
Neutral	Zero consequence with any combination of extent and duration

Table 28.2.4 Probability, confidence, reversibility and irreplaceability

Criteria	Rating	Description
Probability	Definite	>90% likelihood of the impact occurring
	Probable	70 – 90% likelihood of the impact occurring
	Possible	40 – 70% likelihood of the impact occurring
	Unlikely	<40% likelihood of the impact occurring
Confidence	Certain	Wealth of information on and sound understanding of the environmental factors potentially affecting the impact
	Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact
	Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact
Reversibility	Reversible	The impact is reversible within 2 years after the cause or stress is removed
	Irreversible	The activity will lead to an impact that is in all practical terms permanent
Irreplaceability	Replaceable	The resources lost can be replaced to a certain degree
	Irreplaceable	The activity will lead to a permanent loss of resources.

28.3 Risk Matrix Methodology

RISK ASSESSMENT KEY (Referenced from DWA RISK-BASED WATER USE AUTHORISATION APPROACH AND DELEGATION GUIDELINES)

Negative Rating

TABLE 1- SEVERITY

How severe does the aspects impact on the environment and resource quality characterisitics (flow regime, water quality, geomorfology, biota, habitat)

Insignificant / non-harmful	1
Small / potentially harmful	2
Significant / slightly harmful	3
Great / harmful	4
Disastrous / extremely harmful and/or wetland(s) involved	5

Where "or wetland(s) are involved" it means

TABLE 2 – SPATIAL SCALE

How big is the area that the aspect is impacting on?

Area specific (at impact site)	1
Whole site (entire surface right)	2
Regional / neighbouring areas (downstream within quaternary catch	3
National (impacting beyond seconday catchment or provinces)	4
Global (impacting beyond SA boundary)	5

TABLE 3 – DURATION

How long does the aspect impact on the environment and resource quality?

One day to one month, PES, EIS and/or REC not impacted
One month to one year, PES, EIS and/or REC impacted but no change in status
One year to 10 years, PES, EIS and/or REC impacted to a lower status but can be improved over this period through mitigation
Life of the activity, PES, EIS and/or REC permanently lowered
More than life of the organisation/facility, PES and EIS scores, a E or F

TABLE 4 – FREQUENCY OF THE ACTIVITY

How often do you do the specific activity?

Annually or less	1
6 monthly	2
Monthly	3
Weekly	4
Daily	5

TABLE 5 – FREQUENCY OF THE INCIDENT/IMPACT

How often does the activity impact on the environment?

Almost never / almost impossible / >20%	1
Very seldom / highly unlikely / >40%	2
Infrequent / unlikely / seldom / >60%	3
Often / regularly / likely / possible / >80%	4
Daily / highly likely / definitely / >100%	5

TABLE 6 – LEGAL ISSUES

How is the activity governed by legislation?

No legislation	1
Fully covered by legislation (wetlands are legally governed)	5

Located within the regulated areas

TABLE 7 – DETECTION	
How quickly can the impacts/risks of the activity be observed on the environment (water resourc	
Immediately	
Without much effort	
Need some effort	
Remote and difficult to observe	
Covered	

TABLE 8: RATING CLASSES		
RATING	**CLASS**	**MANAGEMENT DESCRIPTION**
1 – 55	(L) Low Risk	Acceptable as is or consider requirement for mitigation. Impact to watercourses and resource quality small and easily mitigated. Wetlands may be excluded.
56 – 169	M) Moderate Risk	Risk and impact on watercourses are notably and require mitigation measures on a higher level, which costs more and
170 – 300	(H) High Risk	Always involves wetlands. Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale
A low risk class must be obtained for all activities to be considered for a GA		

TABLE 9: CALCULATIONS

Consequence = Severity + Spatial Scale + Duration
Likelihood=Frequency of Activity + Frequency of Incident +Legal Issues + Detection
Significance \Risk= Consequence X Likelihood

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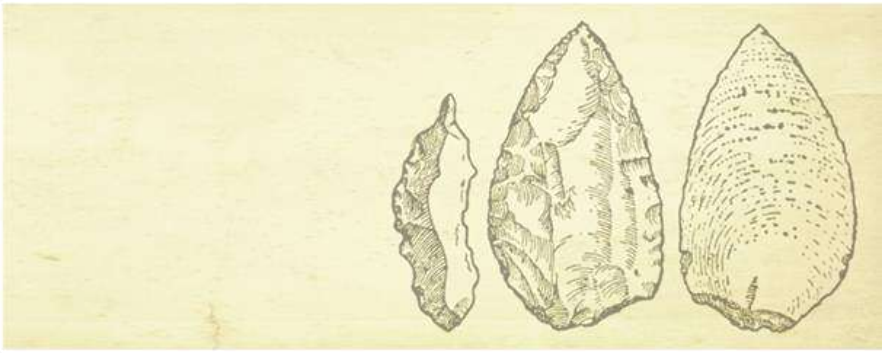

PHASE 1 HIA REPORT, BLAAUWSKOP SETTLEMENT LOW-COST HOUSING DEVELOPMENT, NORTHERN CAPE

PROPOSED FORMALISATION OF BLAAUWSKOP SETTLEMENT LOW-COST HOUSING DEVELOPMENT ON PORTION 30 OF FARM BLAAUWSKOP NO. 36, BLAAUWSKOP SETTLEMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, Z.F. MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE.

PREPARED FOR:
ENVIROAFRICA

PREPARED BY:
JAN ENGELBRECHT & HEIDI FIVAZ
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12 MARCH 2019

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For this project, Mr Engelbrecht was responsible for the field survey of the development footprint, identification of heritage resources, and recommendations. Ms Fivaz was responsible for research and report compilation. Desktop research completed by Miss Sky-Lee Fairhurst.

Declaration of independence:

We, Jan Engelbrecht and Heidi Fivaz, partners of UBIQUE Heritage Consultants, hereby confirm our independence as heritage specialists and declare that:

- we are suitably qualified and accredited to act as independent specialists in this application;
- we do not have any vested interests (either business, financial, personal or other) in the proposed development project other than remuneration for the heritage assessment and heritage management services performed;
- the work was conducted in an objective and ethical manner, in accordance with a professional code of conduct and within the framework of South African heritage legislation.

Signed: **Date: 2019-03-12**

J.A.C. Engelbrecht & H. Fivaz
UBIQUE Heritage Consultants

EXECUTIVE SUMMARY

Technical summary

Project description	
Project name	Blaauwskop Settlement low cost housing development, Blaauwskop Settlement, Northern Cape.
Description	The proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, Z.F. Mgcawu District Municipality, Northern Cape,
Developer	
Kai !Garib Municipality	
Consultants	
Environmental	EnviroAfrica cc.
Heritage and archaeological	UBIQUE Heritage Consultants
Paleontological	Banzai Environmental
Property details	
Province	Northern Cape
District municipality	Z.F. Mgcawu
Local municipality	Kai !Garib
Topo-cadastral map	2821CA 1:50 000
Farm name	Blaauwskop No. 36, Portion 30
Closest town	Louisvale
GPS Co-ordinates	28° 40' 08.78" S 21° 06' 07.45" E
Development footprint size	50 ha

Figure 1 *Project footprint, represented by red polygon, indicated on Google Earth Satellite Image.*

Project description

UBIQUE Heritage Consultants were appointed by EnviroAfrica cc. as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA), to conduct a cultural heritage assessment to determine the impact of the proposed formalisation and low cost housing development of Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, on any sites, features, or objects of cultural heritage significance. The site is located approximately 13.5km north-east of Keimoes and the R359 Road is approximately 435m west of the site. It is situated in the Kai !Garib Local Municipality, Z.F. Mgcawu District Municipality, Northern Cape.

Findings and Impact on Heritage Resources

Description	Development Impact		Mitigation	Field rating/ Significance
Archaeological				
1. Five occurrences of lithic material were recorded within the development footprint on Portion 30 of Farm Blaauwskop No. 36. The lithic assemblages consist of surface scatters of very few formal tools, predominantly untrimmed flakes, cores, stone working debris, and few scrapers made from the highly utilised banded ironstone formation (BIF).	Nature	Neutral	No mitigation required.	Field Rating IV C Low significance
	Extent	Low		
	Duration	Low		
	Intensity	Low		
	Potential of impact on irreplaceable resource	Low		
	Consequence	Low		
	Probability of impact	Low		
	Significance	Low		
2. Three incidences of lithic material were recorded outside the development footprint, towards the south.	Nature	Neutral	No mitigation required.	Field Rating IV C Low significance
	Extent	Low		
	Duration	Low		
	Intensity	Low		
	Potential of impact on irreplaceable resource	Low		
	Consequence	Low		
	Probability of impact	Low		
	Significance	Low		
Graves				
3. No formal or informal graves were identified.	Nature	N/A	No mitigation required.	N/A
	Extent	N/A		
	Duration	N/A		
	Intensity	N/A		
	Potential of impact on irreplaceable resource	N/A		
	Consequence	N/A		
	Probability of impact	N/A		
	Significance	N/A		
Paleontological				
4. Area has zero palaeontological significance.	Nature	N/A	No mitigation required.	N/A
	Extent	N/A		
	Duration	N/A		
	Intensity	N/A		
	Potential of impact on irreplaceable resource	N/A		
	Consequence	N/A		
	Probability of impact	N/A		
	Significance	N/A		

Recommendations

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

1. The lithic traces on the landscape of the study area are of low significance and the impact of the development on these resources are inconsequential. No other heritage was identified. Therefore, no further mitigation is required, and from a heritage point of view we recommend that the proposed development can continue.

2. Due to the zero palaeontological significance of the area, no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area as the igneous rocks underlying the site are not fossiliferous. It is therefore recommended that the project be exempt from a full Paleontological Impact Assessment (Butler 2019).

3. Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any possible discovery of finds such as stone tool scatters, artefacts, human remains, or fossils are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.

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ABBREVIATIONS

AIA:	Archaeological Impact Assessment
ASAPA:	Association of South African Professional Archaeologists
BIA:	Basic Impact Assessment
CRM:	Cultural Resource Management
ECO:	Environmental Control Officer
EIA:	Environmental Impact Assessment*
EIA:	Early Iron Age*
EMP:	Environmental Management Plan
ESA:	Earlier Stone Age
GPS:	Global Positioning System
HIA:	Heritage Impact Assessment
LIA:	Late Iron Age
LSA:	Later Stone Age
MEC:	Member of the Executive Council
MIA:	Middle Iron Age
MPRDA:	Mineral and Petroleum Resources Development Act
MSA:	Middle Stone Age
NEMA:	National Environmental Management Act
NHRA:	National Heritage Resources Act
OWC:	Orange River Wine Cellars
PRHA:	Provincial Heritage Resource Agency
SADC:	Southern African Development Community
SAHRA:	South African Heritage Resources Agency

**Although EIA refers to both Environmental Impact Assessment and the Early Iron Age both are internationally accepted abbreviations it must be read and interpreted in the context it is used.*

GLOSSARY

Archaeological: material remains resulting from human activity which are in a state of disuse and are in or on land and are older than 100 years, including artefacts, human and hominid remains and artificial features and structures;

- rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and is older than 100 years (as defined and protected by the National Heritage Resources Act (NHRA) (Act No. 25 of 1999) including any area within 10 m of such representation;
- wrecks, being any vessel or aircraft, or any part thereof, which were wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the culture zone of the Republic, as defined respectively in sections 3, 4 and 6 of the Maritime Zones Act, 1994 (Act No. 15 of 1994), and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation;
- features, structures and artefacts associated with military history, which are older than 75 years and the sites on which they are found.

Stone Age:	The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.
Earlier Stone Age:	>2 000 000 - >200 000 years ago
Middle Stone Age:	<300 000 - >20 000 years ago
Later Stone Age:	<40 000 - until the historical period
Iron Age:	(Early Farming Communities). Period covering the last 1800 years, when immigrant African farmer groups brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and herded cattle as well as sheep and goats. As they produced their own iron tools, archaeologists call this the Iron Age.
Early Iron Age:	AD 200 - AD 900
Middle Iron Age:	AD 900 - AD 1300
Later Iron Age:	AD 1300 - AD 1850
Historic:	Period of arrival of white settlers and colonial contact. AD 1500 to 1950
Historic building:	Structures 60 years and older.
Fossil:	Mineralised bones of animals, shellfish, plants and marine animals. A trace fossil is the track or footprint of a fossil animal that is preserved in stone or consolidated sediment.
Heritage:	That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act 25 of 1999).
Heritage resources:	These mean any place or object of cultural significance, tangible or intangible.
Holocene:	The most recent geological period that commenced 10 000 years ago.
Palaeontology:	Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site that contains such fossilised remains or traces
Cumulative impacts:	"Cumulative Impact", 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 may not be significant, but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities.
Mitigation:	Anticipating and preventing negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.
A 'place':	a site, area or region;

- a building or other structure which may include equipment, furniture, fittings and articles associated with or connected with such building or other structure;
- a group of buildings or other structures which may include equipment, furniture, fittings and articles associated with or connected with such group of buildings or other structures;
- an open space, including a public square, street or park; and
- in relation to the management of a place, includes the immediate surroundings of a place.

'Public monuments and memorials': mean all monuments and memorials—

- erected on land belonging to any branch of central, provincial or local government, or on land belonging to any organisation funded by or established in terms of the legislation of such a branch of government; or
- which were paid for by public subscription, government funds, or a public-spirited or military organisation, and are on land belonging to any private individual;

'Structures': any building, works, device or other facility made by people and which are fixed to land, and include any fixtures, fittings and equipment associated therewith.

1. INTRODUCTION

1.1 Scope of study

The project involves the proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape. It includes activities listed in terms of the NEMA EIA Regulations 2014, and UBIQUE Heritage Consultants were appointed by EnviroAfrica cc as independent heritage specialists in accordance with the National Environmental Management Act 107 of 1998 (NEMA), and in compliance with Section 38 of the National Heritage Resources Act 25 of 1999 (NHRA), to conduct a cultural heritage assessment (AIA/HIA) of the development area.

The aim of the assessment is to identify and report any heritage resources that may fall within the development footprint; to determine the impact of the proposed development on any sites, features, or objects of cultural heritage significance; to assess the significance of any identified resources; and to assist the developer in managing the documented heritage resources in an accountable manner, within the framework provided by the National Heritage Resources Act (Act 25 of 1999) (NHRA).

South Africa's heritage resources are both rich and widely diverse, encompassing sites from all periods of human history. Resources may be tangible, such as buildings and archaeological artefacts, or intangible, such as landscapes and living heritage. Their significance is based upon their aesthetic, architectural, historical, scientific, social, spiritual, linguistic, economic or technological values; their representation of a time or group; their rarity; and their sphere of influence.

The integrity and significance of heritage resources can be jeopardized by natural (e.g. erosion) and human (e.g. development) activities. In the case of human activities, a range of legislation exists to ensure the timeous and accurate identification and effective management of heritage resources for present and future generations.

The result of this investigation is presented within this heritage impact assessment report. It comprises the recording of heritage resources present/ absent and offers recommendations for the management of these resources within the context of the proposed development.

Depending on SAHRA's acceptance of this report, the developer will receive permission to proceed with the proposed development, taking in account any proposed mitigation measures.

1.2 Assumptions and limitations

It is assumed that the description of the proposed project, as provided by the client, is accurate. Furthermore, it is assumed that the public consultation process undertaken as part of the Environmental Impact Assessment (EIA) is comprehensive and does not have to be repeated as part of the heritage impact assessment.

The significance of the sites, structures and artefacts is determined by means of their historical, social, aesthetic, technological and scientific value in relation to their uniqueness, condition of preservation and research potential. The various aspects are not mutually exclusive, and the evaluation of any site is done with reference to any number of these aspects. Cultural significance is site-specific and relates to the content and context of the site.

Although all possible care has been taken during the comprehensive field survey and intensive desktop study to identify sites of cultural importance within the development areas, it is important to note that some heritage sites may have been missed due to their subterranean nature, or due to dense vegetation cover. No subsurface investigation (i.e. excavations or sampling) were undertaken, since a permit from SAHRA is required for such activities. Therefore, should any heritage features and/or objects such as architectural features, stone tool scatters, artefacts, human remains, or fossils be uncovered or observed during construction, operations must be stopped, and a qualified archaeologist contacted for an assessment of the find. Observed or located heritage features and/or objects may not be disturbed or removed in any way until such time that the heritage specialist has been able to make an assessment as to the significance of the site (or material) in question.

2. TERMS OF REFERENCE

An HIA/ AIA must address the following key aspects:

- the identification and mapping of all heritage resources in the area affected;
- an assessment of the significance of such resources in terms of heritage assessment criteria set out in regulations;
- an assessment of the impact of the development on heritage resources;
- an evaluation of the impact of the development on heritage resources relative to the sustainable social and economic benefits to be derived from the development;
- if heritage resources will be adversely affected by the proposed development, the consideration of alternatives; and
- plans for mitigation of any adverse effects during and after completion of the proposed development.

In addition, the HIA/AIA should comply with the requirements of NEMA, including providing the assumptions and limitations associated with the study; the details, qualifications and expertise of the person who prepared the report; and a statement of competency.

2.1. Statutory Requirements

2.1.1 General

The Constitution of the Republic of South Africa Act 108 of 1996 is the source of all legislation. Within the Constitution the Bill of Rights is fundamental, with the principle that the environment should be protected for present and future generations by preventing pollution, promoting conservation and practising ecologically sustainable development. With regard to spatial planning and related legislation at national and provincial levels the following legislation may be relevant:

- Physical Planning Act 125 of 1991
- Municipal Structures Act 117 of 1998
- Municipal Systems Act 32 of 2000
- Development Facilitation Act 67 of 1995 (DFA)

The identification, evaluation and management of heritage resources in South Africa are required and governed by the following legislation:

- National Environmental Management Act 107 of 1998 (NEMA)
- KwaZulu-Natal Heritage Act 4 of 2008 (KZNHA)
- National Heritage Resources Act 25 of 1999 (NHRA)
- Minerals and Petroleum Resources Development Act 28 of 2002 (MPRDA)

2.1.2 National Heritage Resources Act 25 of 1999

The NHRA established the South African Heritage Resources Agency (SAHRA) together with its Council to fulfil the following functions:

- co-ordinate and promote the management of heritage resources at national level;
- set norms and maintain essential national standards for the management of heritage resources in the Republic and to protect heritage resources of national significance;
- control the export of nationally significant heritage objects and the import into the Republic of cultural property illegally exported from foreign countries;
- enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources; and
- provide for the protection and management of conservation-worthy places and areas by local authorities.

2.1.3 Heritage Impact Assessments/Archaeological Impact Assessments

Section 38(1) of the NHRA of 1999 requires **the responsible heritage resources authority to notify the person who intends to undertake a development that fulfils the following criteria to submit an impact assessment report if there is reason to believe that heritage resources will be affected by such development:**

- the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
- the construction of a bridge or similar structure exceeding 50m in length;
- any development or other activity that will change the character of a site—
    - exceeding 5000m² in extent; or
    - involving three or more existing erven or subdivisions thereof; or
    - involving three or more erven or divisions thereof which have been consolidated within the past five years; or
    - the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
- the re-zoning of a site exceeding 10 000m² in extent; or

- any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.

2.1.4 Definitions of heritage resources

The NHRA defines a heritage resource as any place or object of cultural significance, i.e. of aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance. These include, but are not limited to, the following wide range of places and objects:

- living heritage as defined in the National Heritage Council Act No 11 of 1999 (cultural tradition; oral history; performance; ritual; popular memory; skills and techniques; indigenous knowledge systems; and the holistic approach to nature, society and social relationships);
- Ecofacts (non-artefactual organic or environmental remains that may reveal aspects of past human activity; definition used in KwaZulu-Natal Heritage Act 2008);
- places, buildings, structures and equipment;
- places to which oral traditions are attached or which are associated with living heritage;
- historical settlements and townscapes;
- landscapes and natural features;
- geological sites of scientific or cultural importance;
- archaeological and palaeontological sites;
- graves and burial grounds;
- public monuments and memorials;
- sites of significance relating to the history of slavery in South Africa;
- movable objects, but excluding any object made by a living person; and
- battlefields.

Furthermore, a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—

- its importance in the community, or pattern of South Africa's history;
- its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
- its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
- its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
- its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
- its importance in demonstrating a high degree of creative or technical achievement at a particular period;
- its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons; and
- its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa.

2.1.5 Management of Graves and Burial Grounds

- **Graves younger than 60 years** are protected in terms of Section 2(1) of the Removal of Graves and Dead Bodies Ordinance 7 of 1925 as well as the Human Tissues Act 65 of 1983.

- **Graves older than 60 years, situated outside a formal cemetery administered by a local**

Authority are protected in terms of Section 36 of the NHRA as well as the Human Tissues Act of 1983. Accordingly, such graves are the jurisdiction of SAHRA. The procedure for Consultation Regarding Burial Grounds and Graves (Section 36(5) of NHRA) is applicable to graves older than 60 years that are situated outside a formal cemetery administrated by a local authority. Graves in the category located inside a formal cemetery administrated by a local authority will also require the same authorisation as set out for graves younger than 60 years over and above SAHRA authorisation.

The **protocol for the management of graves older than 60 years situated outside a formal cemetery administered by a local authority** is detailed in Section 36 of the NHRA:

(3) *(a)* No person may, without a permit issued by SAHRA or a provincial heritage resources authority—

(a) destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;

(b) destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or

(c) bring onto or use at a burial ground or grave referred to in paragraph *(a)* or *(b)* any excavation equipment, or any equipment which assists in the detection or recovery of metals.

(4) SAHRA or a provincial heritage resources authority may not issue a permit for the destruction or damage of any burial ground or grave referred to in subsection (3)*(a)* unless it is satisfied that the applicant has made satisfactory arrangements for the exhumation and re-interment of the contents of such graves, at the cost of the applicant and in accordance with any regulations made by the responsible heritage resources authority.

(5) SAHRA or a provincial heritage resources authority may not issue a permit for any activity under subsection (3)*(b)* unless it is satisfied that the applicant has, in accordance with regulations made by the responsible heritage resources authority—

(a) made a concerted effort to contact and consult communities and individuals who by tradition have an interest in such grave or burial ground; and

(b) reached agreements with such communities and individuals regarding the future of such grave or burial ground.

(6) Subject to the provision of any other law, any person who in the course of development or any other activity discovers the location of a grave, the existence of which was previously unknown, must immediately cease such activity and report the discovery to the responsible heritage resources authority which must, in co-operation with the South African Police Service and in accordance with regulations of the responsible heritage resources authority—

(a) carry out an investigation for the purpose of obtaining information on whether or not such grave is protected in terms of this Act or is of significance to any community; and

(b) if such grave is protected or is of significance, assist any person who or community which is a direct descendant to make arrangements for the exhumation and re-interment of the contents of such grave or, in the absence of such person or community, make any such arrangements as it deems fit.

3. STUDY APPROACH AND METHODOLOGY

3.1 Desktop study

The first step in the methodology was to conduct a desktop study of the heritage background of the area and the site of the proposed development. This entailed the scoping and scanning of historical texts/records as well as previous heritage studies and research around the study area.

By incorporating data from previous CRM reports done in the area and an archival search, the study area is contextualised. The objective of this is to extract data and information on the area in question, looking at archaeological sites, historical sites and graves of the area.

No archaeological site data was available for the project area. A concise account of the archaeology and history of the broader study area was compiled from sources including those listed in the bibliography.

3.1.1 Literature review

A survey of literature was undertaken to obtain background information regarding the area. Researching the SAHRA APM Report Mapping Project records and the SAHRIS online database (http://www.sahra.org.za/sahris), it was determined that several other archaeological or historical studies have been performed within the wider vicinity of the study area. Sources consulted in this regard are indicated in the bibliography.

3.2 Field study

The Phase 1 (AIA/HIA) requires the completion of a field study to establish and ensure the following:

3.2.1 Systematic survey

A systematic survey of the proposed project area to locate, identify, record, photograph and describe sites of archaeological, historical or cultural interest, was completed.

UBIQUE Heritage Consultants inspected the proposed development and surrounding areas on 6th, 7th, and 8th of February 2019 and completed a controlled-exclusive, pre-planned, pedestrian survey. We conducted an inspection of the surface of the ground, wherever the surface was visible. This was done with no substantial attempt to clear brush, sand, deadfall, leaves or other material that may cover the surface and with no attempt to look beneath the surface beyond the inspection of rodent burrows, cut banks and other exposures fortuitously observed.

The survey was tracked with a handheld Garmin global positioning unit (Garmin eTrex 10), and Android Locus Maps application on Samsung Galaxy S9.

3.2.2 Recording significant areas

GPS points of identified significant areas were recorded with a handheld Garmin global positioning unit (Garmin eTrex 10) and Android Locus Maps application on Samsung Galaxy S9. Photographs were taken with a Nikon Coolpix 10-megapixel camera. Detailed fieldnotes were taken to describe observations. The layout of the area and plotted by GPS points, tracks and coordinates, were transferred to Google Earth and QGIS, and maps were created.

3.2.3 Determining significance

Levels of significance of the various types of heritage resources observed and recorded in the project area will be determined to the following criteria:

Cultural significance:

- Low	A cultural object being found out of context, not being part of a site or without any related feature/structure in its surroundings.
- Medium	Any site, structure or feature being regarded less important due to several factors, such as date and frequency. Likewise, any important object found out of context.
- High	Any site, structure or feature regarded as important because of its age or uniqueness. Graves are always categorized as of a high importance. Likewise, any important object found within a specific context.

Heritage significance:

- Grade I	Heritage resources with exceptional qualities to the extent that they are of national significance
- Grade II	Heritage resources with qualities giving it provincial or regional importance although it may form part of the national estate
- Grade III	Other heritage resources of local importance and therefore worthy of Conservation

Field ratings:

i.	National Grade I	significance should be managed as part of the national estate
ii.	Provincial Grade II	significance should be managed as part of the provincial estate
iii.	Local Grade IIIA	should be included in the heritage register and not be mitigated (high significance)
iv.	Local Grade IIIB	should be included in the heritage register and may be mitigated (high/ medium significance)

v. General protection A (IV A) site should be mitigated before destruction (high/ medium significance)

vi. General protection B (IV B) site should be recorded before destruction (medium significance)

vii. General protection C (IV C) phase 1 is seen as sufficient recording and it may be demolished (low significance)

Heritage value, statement of significance:

a. its importance in the community, or pattern of South Africa's history;

b. its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;

c. its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;

d. its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;

e. its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;

f. its importance in demonstrating a high degree of creative or technical achievement at a particular period;

g. its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;

h. its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

i. sites of significance relating to the history of slavery in South Africa.

3.2.4 Assessment of development impacts

A heritage resource impact may be defined broadly as the net change, either beneficial or adverse, between the integrity of a heritage site with and without the proposed development. Beneficial impacts occur wherever a proposed development actively protects, preserves or enhances a heritage resource, by minimising natural site erosion or facilitating non-destructive public use, for example. More commonly, development impacts are of an adverse nature and can include:

- destruction or alteration of all or part of a heritage site;
- isolation of a site from its natural setting; and / or
- introduction of physical, chemical or visual elements that are out of character with the heritage resource and its setting.

Beneficial and adverse impacts can be direct or indirect, as well as cumulative, as implied by the examples. Although indirect impacts may be more difficult to foresee, assess and quantify, they

must form part of the assessment process. The following assessment criteria have been used to assess the impacts of the proposed development on possible identified heritage resources:

Criteria	Rating Scales	Notes
Nature	Positive	An evaluation of the type of effect the construction, operation and management of the proposed development would have on the heritage resource.
	Negative	
	Neutral	
Extent	Low	Site-specific, affects only the development footprint.
	Medium	Local (limited to the site and its immediate surroundings, including the surrounding towns and settlements within a 10 km radius);
	High	Regional (beyond a 10 km radius) to national.
Duration	Low	0-4 years (i.e. duration of construction phase).
	Medium	5-10 years.
	High	More than 10 years to permanent.
Intensity	Low	Where the impact affects the heritage resource in such a way that its significance and value are minimally affected.
	Medium	Where the heritage resource is altered, and its significance and value are measurably reduced.
	High	Where the heritage resource is altered or destroyed to the extent that its significance and value cease to exist.
Potential for impact on irreplaceable resources	Low	No irreplaceable resources will be impacted.
	Medium	Resources that will be impacted can be replaced, with effort.
	High	There is no potential for replacing a particular vulnerable resource that will be impacted.
Consequence, (a combination of extent, duration, intensity, and the potential for impact on irreplaceable resources).	Low	A combination of any of the following: - Intensity, duration, extent and impact on irreplaceable resources are all rated low. - Intensity is low and up to two of the other criteria are rated medium. - Intensity is medium and all three other criteria are rated low.
	Medium	Intensity is medium and at least two of the other criteria are rated medium.
	High	Intensity and impact on irreplaceable resources are rated high, with any combination of extent and duration. Intensity is rated high, with all the other criteria being rated medium or higher.

Criteria	Rating Scales	Notes
Probability (the likelihood of the impact occurring)	Low	It is highly unlikely or less than 50 % likely that an impact will occur.
	Medium	It is between 50 and 70 % certain that the impact will occur.
	High	It is more than 75 % certain that the impact will occur, or it is definite that the impact will occur.
Significance (all impacts including potential cumulative impacts)	Low	Low consequence and low probability. Low consequence and medium probability. Low consequence and high probability.
	Medium	Medium consequence and low probability. Medium consequence and medium probability. Medium consequence and high probability. High consequence and low probability.
	High	High consequence and medium probability. High consequence and high probability.

3.3 Oral history

Where possible, people from local communities were interviewed to obtain information relating to the surveyed area.

3.4 Report

The results of the desktop research and field survey are compiled in this report. The identified heritage resources and anticipated and cumulative impacts that the development of the proposed project may have on the identified heritage resources will be presented objectively. Alternatives, should any significant sites be impacted adversely by the proposed project, are offered. All effort will be made to ensure that all studies, assessments and results comply with the relevant legislation and the code of ethics and guidelines of the Association of South African Professional Archaeologists (ASAPA). The report aims to assist the developer in managing the documented heritage resources in a responsible manner, and to protect, preserve, and develop them within the framework provided by the National Heritage Resources Act of 1999 (Act 25 of 1999).

4. PROJECT OVERVIEW

UBIQUE Heritage Consultants were appointed by EnviroAfrica cc. as independent heritage specialists in accordance with Section 38 of the NHRA and the National Environmental Management Act 107 of 1998 (NEMA), to conduct a cultural heritage assessment to determine the impact of the proposed formalisation and low cost housing development of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, on any sites, features, or objects of cultural heritage significance. The proposed site is located approximately 13.5km north-east of Keimoes and approximately 435 m east of the R359 Road in the Kai !Garib Local Municipality, Z.F. Mgcawu District Municipality, Northern Cape.

The project entails the rezoning and the subdivision of 500 Erven for low cost houses. The project includes the associated infrastructure such as water, electricity, sewage, and solid waste removal. The total residential area to be developed would be approximately 50 ha.

4.1 Technical information

Project description	
Project name	Blaauwskop Settlement low cost housing development, Blaauwskop Settlement, Northern Cape.
Description	The proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape,
Developer	
Kai !Garib local Municipality	
Contact information	Tel: (+27)54 461 6700 Fax: (+27)54 467 6401
Development type	Civil: Construction of low-cost housing of 500 erven
Land owner	
Contact information	As Above
Consultants	
Environmental	EnviroAfrica cc.
Heritage and archaeological	UBIQUE Heritage Consultants
Paleontological	Banzai Environmental
Property details	
Province	Northern Cape
District municipality	Z.F. Mgcawu
Local municipality	Kai !Garib
Topo-cadastral map	2821CA 1:50 000
Farm name	Blaauwskop No. 36, Portion 30
Closest town	Louisvale
GPS Co-ordinates	28° 40' 08.78" S 21° 06' 07.45" E
Property size	50 ha

Development footprint size	50 ha
Land use	
Previous	None
Current	Informal settlement
Re- zoning required	Yes
Sub-division of land	Yes

Development criteria in terms of Section 38(1) NHRA	Yes/No
Construction of a road, wall, power line, pipeline, canal or other linear form of development or barrier exceeding 300m in length.	No
Construction of bridge or similar structure exceeding 50m in length.	No
Construction exceeding 5000m ^{2}.	Yes
Development involving three or more existing erven or subdivisions.	Yes
Development involving three or more erven or divisions that have been consolidated within the past five years.	Yes
Rezoning of site exceeding 10 000m ^{2}.	Yes
Any other development category, public open space, squares, parks, recreation grounds.	No

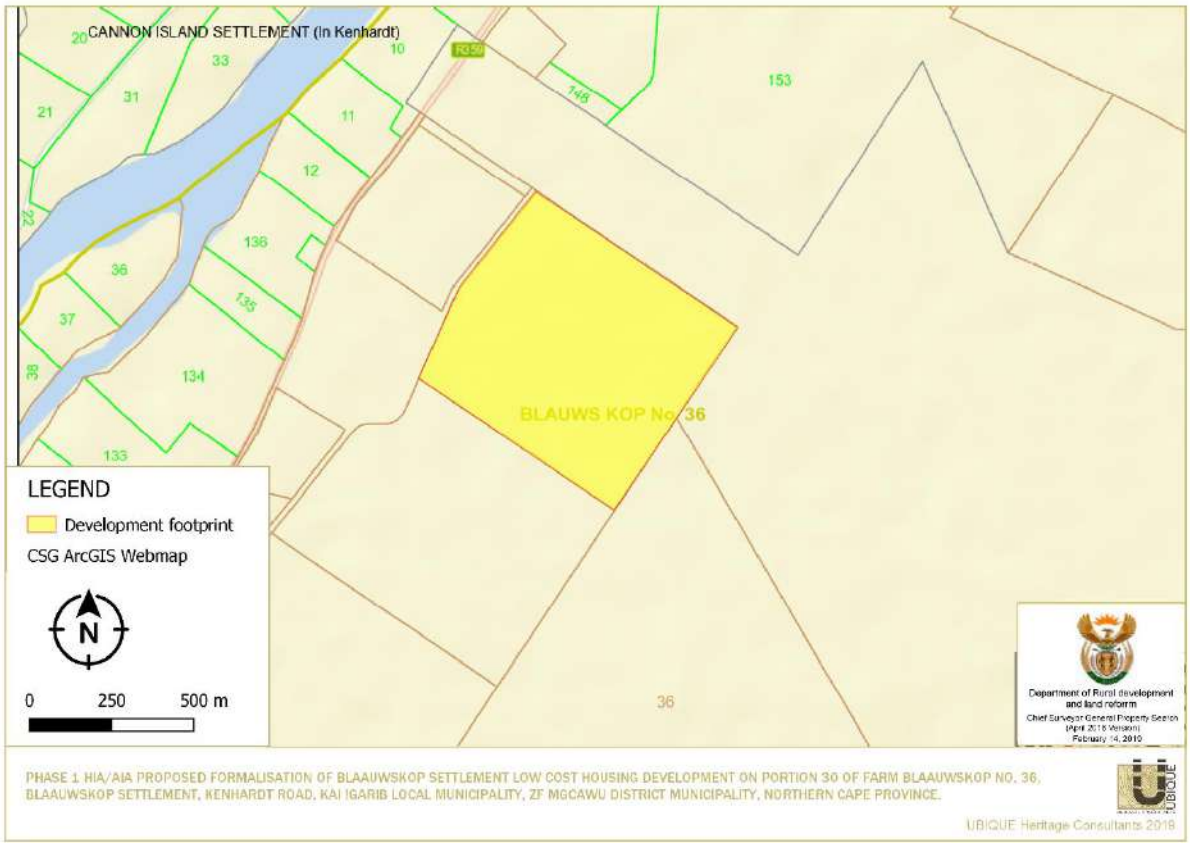


Figure 2 *Project footprint, represented by yellow polygon, indicated on Chief Surveyor General Property Search ArcGIS Web Map.*

(https://csg.esri-southafrica.com/portal/apps/webappviewer/index.html?id=34ec3dcf8d8642bb9ed7f795cbfe8faf)

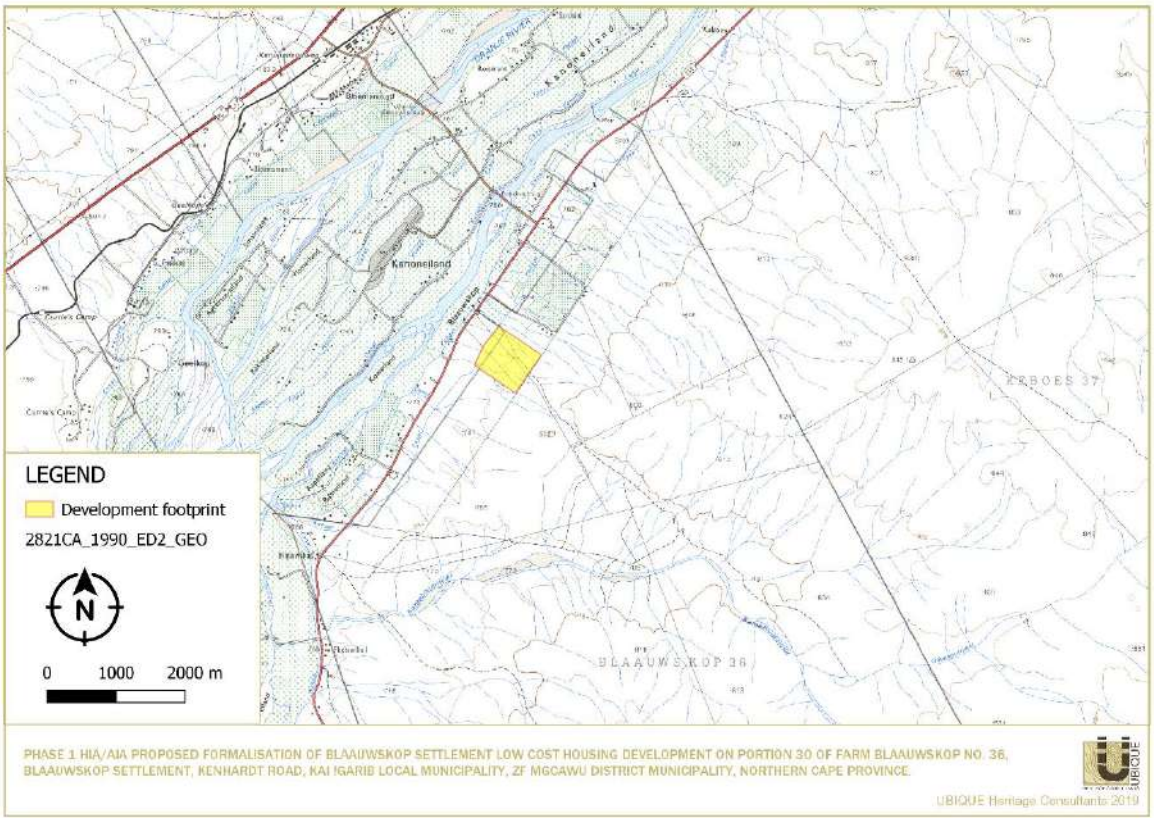


Figure 3 Locality of proposed low-cost housing development on Farm Blaauwskop No. 36, Portion 30, Blaauwskop Settlement. 1:50 000 Topo-cadastral map WGS2821CA, Chief Surveyor General.

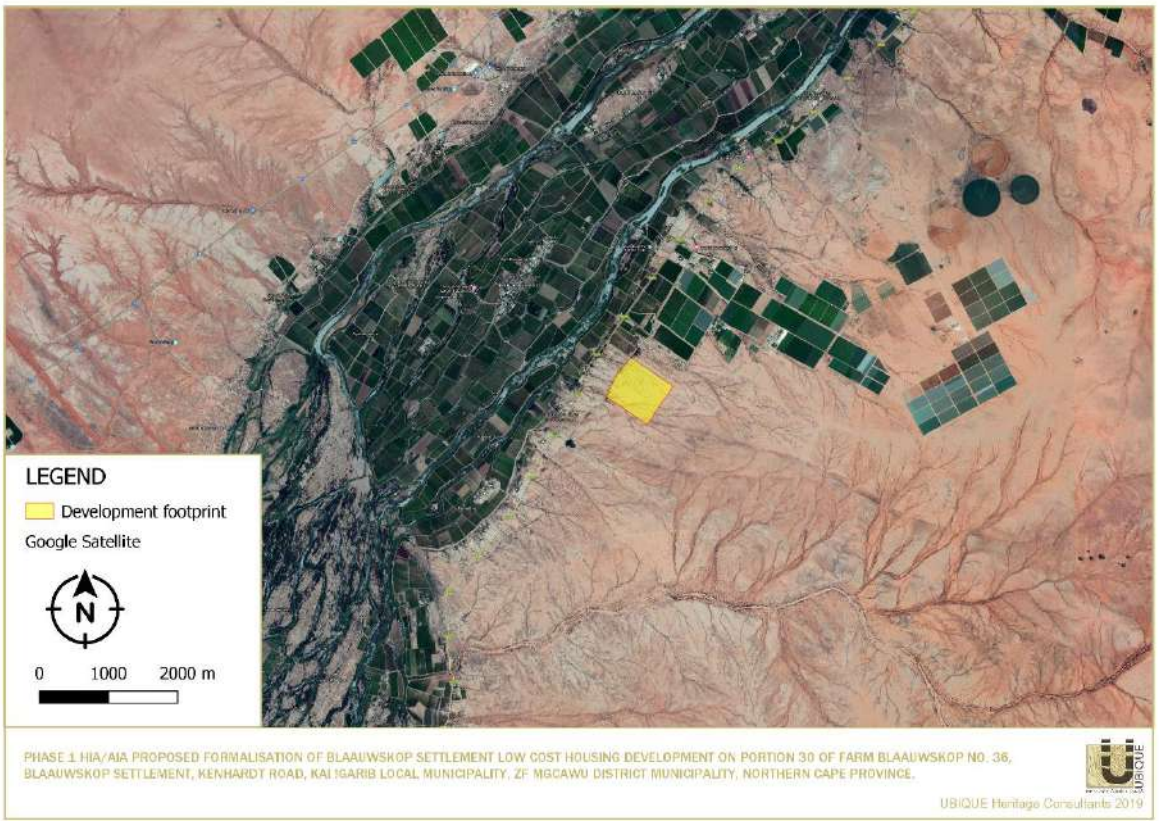


Figure 4 Locality of proposed low-cost housing development on Farm Blaauwskop No. 36, Portion 30, Blaauwskop Settlement . Google Earth Satellite image.

4.2 Description of affected environment

The Kai !Garib Local Municipality falls predominantly within the Nama-Karoo biome (Mucina & Rutherford 2006), and most of the vegetation type in the study area is typical Bushmanland Arid Grassland. The landscape is characterised by extensive to irregular plains on a slightly sloping plateau sparsely vegetated by grassland dominated by white grasses (*Stipagrostis* species) characteristic a of semidesert 'steppe'. In places low shrubs of *Salsola* change the vegetation structure. In years of abundant rainfall rich displays of annual herbs can be expected (Mucina & Rutherford 2006). Vegetation observed in the study area include *Acacia mellifera (*Black thorn acacia), *Acacia erioloba (*Camelthorn), *Rhigozum trichotomum (*Three-thorn), *Aloe argenticauda, Prosopis aferensis, Stipagrostis namaquensis (*River bushman grass), *Aizoon schellenbergii* (Skaapbossie). The soils of most of the area are freely drained red-yellow apedal soils (Mucina & Rutherford 2006). The study area consists of rocky *klipveld* with surface scatters of Quartz, Quartzite, Banded Ironstone Formation (BIF), and Sandstone and Calcrete deposits with visible Quartzite outcrops to the north of the site.

The Blaauwskop Settlement is situated to the south-east of the Gariep/Orange River, which is characterised by Lower Gariep Alluvial vegetation. The study area is situated north of an agricultural area that is part of intensive Irrigation Farming Community stretching from Groblershoop in the east up to Blouputs in the west. The Gariep/Orange River cuts through a great variety of Precambrian metamorphic rocks and is subjected to floods, especially in summer, as a result of high precipitation on the highveld. The soil of these areas is very fertile resulting in various grapes and other crops such as pecan nut- and citrus plantations being planted along the Gariep/Orange River (Mucina & Rutherford 2006).

The development site is located approximately 13.5km north-east of Keimoes and the R359 Road is approximately 435 m west of the site. Towards the west and north-west, the site is bounded by an irrigation canal, and private farm boundary fences in the north, east, and south. Moderate natural erosion occurs along the dry riverine. Approximately 10-20 ha of the entire footprint is disturbed by anthropogenic causes. The site has been impacted upon by construction activities associated with the informal settlement already present, and upcoming housing developments.

Figure 5 *Views of the affected development area.*

5. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

5.1 Region

The Northern Cape is rich in archaeological sites and landscapes that reflect the complex South African heritage from the Stone Age to Colonial history.

5.1.1 Stone Age

The Stone Age is the period in human history when lithic material was mainly used to produce tools (Coertze & Coertze 1996). In South Africa the Stone Age can be divided in three periods. It is, however, important to note that dates are relative and only provide a broad framework for interpretation. The division of the Stone Age according to Lombard et al. (2012) is as follows:

Earlier Stone Age: >2 000 000 - >200 000 years ago
Middle Stone Age: <300 000 - >20 000 years ago
Later Stone Age: <40 000 - until the historical period.

Each of the sub-divisions is formed by a group of industries where the assemblages share attributes or common traditions (Lombard et al. 2012). Prominent sites that exemplify these periods in the Nama-Karoo Biome are Rooidam and Bundu Farm (Earlier Stone Age and Middle Stone Age), and Biesje Poort 2, Bokvasmaak 3, Melkboom 1, Vlermuisgat, and Jagtpan 7 (Later Stone Age) (Lombard et al. 2012).

Within the region, Stone Age sites and complexes have been, and are still being investigated in some detail. This includes, but are not limited to, the landscape near Kathu, where numerous Stone Age sites have been documented and excavated, representing the longest preserved lithostratigraphic and archaeological sequence of human occupation at the pan through the ESA, MSA, and LSA and with evidence for 500 000-year-old hafted stone points; ancient specularite working (and mining) on the eastern side of Postmasburg, Doornfontein; and associated Ceramic Later Stone Age material, and also the older transitional ESA/MSA Fauresmith sites at Lyly Feld, Demaneng, Mashwening, King, Rust & Vrede, Paling, Gloucester and Mount Huxley (Beaumont 2004; Beaumont 2013; Beaumont & Morris 1990; Beaumont & Vogel 2006; Morris 2005; Morris & Beaumont 2004; Porat et al. 2010; Thackeray et al. 1983; Walker et al. 2014; Wilkins et al. 2012).

Beaumont et al. (1995) commented that thousands of square kilometres of Bushmanland are covered by low-density lithic scatters. It is therefore not surprising that Stone Age sites and lithic scatters were identified by CRM practitioners between the Garona substation and the Gariep/Orange River in numerous surveys conducted during the recent years. Scatters of MSA material have been recorded close to Griekwastad, Hotazel. Postmasburg and Kenhardt, Pofadder, Marydale, and in the Upington district (Dreyer 2006, 2012, 2014; Pelser & Lombard 2013; PGS Heritage 2009, 2010; Webley 2013). MSA and LSA tools as well as rock engravings were also found at Putsonderwater, Beeshoek and Bruce (Morris 2005; Snyman 2000; Van Vollenhoven 2012b; Van Vollenhoven 2014).

Archaeological surveys have shown rocky outcrops and hills, drainage lines, riverbanks and confluences to be prime localities for archaeological finds and specifically Stone Age sites since these areas where utilized for base camps close to water and hunting ranges. If any such features occur in the study area, Stone Age manifestations can be anticipated (Lombard 2011).

5.1.2 Historical period

The historical period within the region coincides with the incursion of white traders, hunters, explorers, and missionaries into the interior of South Africa. Buildings and structures associated with the early missionaries, travellers, and traders such as PJ Truter's and William Somerville (arriving in 1801), Donovan, Burchell and Campbell, James Read (arriving around 1870) William Sanderson, John Ryan and John Ludwig's (De Jong 2010; Snyman 2000) arrival during the 19th century, and the settlement of the first white farmers and towns, are still evident in the Northern Cape. Numerous heritage reports that provide a synthesis of the incursions of travellers, missionaries and the early European settlers have been captured on the SAHRIS database.

San hunter-gatherer groups utilised the landscape for thousands of years and Khoi herders moved into South Africa with their cattle and sheep approximately 2000 years ago. With the arrival of the Dutch settlers in the Cape in the mid-17th century, clashes between the Europeans and Khoi tribes in the Cape Peninsula resulted in the Goringhaiqua and Goraxouqua migrating north towards the Gariep/Orange River in 1680. These tribes became collectively known as the Korannas, living as small tribal entities in their own separate areas (Penn 2005).

According to Breutz (1953, 1954), and Van Warmelo (1935), several Batswana tribes, including the different Thlaping and Thlaro sections as well as other smaller groups, take their 18th and 19th century roots back to the area around Groblershoop, Olifantshoek, the Langeberg (Majeng) and Korannaberg ranges in the western part of the region. After Britain annexed Bechuanaland in 1885, the land of the indigenous inhabitants was limited to a few reserves. In 1895, when British Bechuanaland was incorporated into the Cape Colony, the land inside the reserves remained the property of the Tswana and could only be alienated with the consent of the British Secretary of State.

Because of its distance from the Cape Colony, this arid part of South Africa's interior was generally not colonised until relatively recent. According to history, the remote northern reaches of the Cape Colony were home to cattle rushers, gun-runners, river pirates and various manner of outlaws. Distribution of land to colonial farmers only occurred from the 1880s onwards when Government-owned land was surveyed, divided into farms, and transferred to farmers. More permanent large-scale settlement however only started in the late 1920s and the first farmsteads were possibly built during this period. The region remained sparsely populated until the advent of the 20th century (De Jong 2010, Penn 2005).

The region has been the backdrop to various incidents of conflict. The arrival of large numbers of Great Trek Boers from the Cape Colony to the borders of Bechuanaland and Griqualand West in 1836 caused conflict with many Tswana groups and the missionaries of the London Mission Society. The conflict between Boer and Tswana communities escalated in the 1860s and 1870s when the Korana and Griqua communities and the British government became involved. The

Northern Cape was very important in the South African War (Anglo-Boer War) (1899-1902) and major battles took place within 120 km of Kimberley, including the battle of Magersfontein. Boer guerrilla forces roamed the entire Northern Cape region and skirmishes between Boer and Brits were regular occurrences. Furthermore, many graves in the region tell the story of battles fought during the 1914 Rebellion (Hopkins 1978).

5.2 Local

During 1778, Swedish-born traveller and explorer Hendrik Wikar, reached the middle and lower reaches of the Orange River after a long land journey that started in Cape Town. As a deserter from the service of the Dutch East India Company, Wikar spent several years within the area, and compiled a report of his experiences in exchange for a pardon (Ross 1975). He documented his encounters with Khoisan communities who called themselves the *Einiqua*, or *River People*. The *Einiqua* were divided into three "kraals": the *Namnykoa* near the Augrabies Falls, the *Kaukoa* on islands west of Keimoes, and the *Aukokoa* of Kanoneiland and other islands to the east. Their kraals consisted of considerable amount of sheep and cattle, they collected plants, hunted game, and cultivated dagga but no other crops according to Wikar (Ross 1975). Amongst the pastoralist communities living on the islands were the *Anoe eis* people who Wikar characterised as "Bushmen". They possessed no domesticated stock, subsisted by fishing, game-trapping, hunting and the gathering of plant foods (Morris & Beaumont 1991). Colonel Robert Jacob Gordon who visited the area in 1779, however remarked that they were actually *Einiqua* (i.e. Khoi) who had "lost their cattle as a result of an argument with the *Namneiqua* village (Morris & Beaumont 1991).

Numerous HIA and AIA reports have been conducted between the Kakamas and Upington landscape. These reports include, but are not limited to, studies involving agricultural developments such as the construction of solar thermal plants and solar parks on/near farms at Olyvenhouts drift, Upington, and Keimoes (Dreyer 2006; Morris 2011), the construction of raisin drier facilities near Kanoneiland (Engelbrecht 2015), sand mining activities in the bed of the Donkerhoekspruit on Jannelsepan near Louisvale (Morris 2018), and road developments at Blaauwskop (Rossouw 2013).

Van Schalkwyk (2013) reported that the cultural landscape qualities of the larger region essentially consist of two components. First is a rural area in which human occupation is made up of a pre-colonial element (Stone Age), as well as a much later historical/colonial (farmer and industrial/mining) component. The second component is an urban landscape dating to the colonial period which is linked to the rural colonial landscape.

5.2.1 Stone Age

According to Kruger (2015) the landscape of this section of the Northern Cape seems to have been relatively sparsely populated by humans in the past, MSA and LSA scatters and quarries occur frequently in low lying areas on plains between dune straights and outcrops along the Orange River. Scatters of stone artefacts in and around the area between Kakamas and Upington have been recorded by, ACRM (2013; 2016(b)), Beaumont (2006; 2008), Dreyer (2006; 2013), Engelbrecht (2015), Kaplan (2008; 2012; 2013), Kruger (2015), Morris (2011; 2013; 2018), Orton et al

(2013), Rossouw (2013), Van Ryneveld (2007), Van Schalkwyk (2013; 2014), and Webley & Halkett (2014), amongst others. The majority of the documented lithics are predominately associated with the MSA, with a few attributed to the ESA and LSA. Most of the documented lithics have low archaeological significance as some of these lithic assemblages are of mixed age, occur on eroded surfaces, and lack in spatial context and integrity (ACRM 2012). Several stone artefacts were also affected by weathering such as gloss patina and riverine cortex gloss patina (Orton et al 2013).

Banded ironstone occurs on several sites throughout the Northern Cape and was a favoured raw material for making stone tools due to its superior flaking qualities (Morris 2012). ACRM (2013) stated that over 95% of the tools recorded, at Site 1 on Erf 666 (Site B), Keimoes, were made with banded ironstone, while the remainder is in indurated shale, quartzite, opaline and quartz. In the landscape surrounding the Keimoes Solar farm on Erf 666, Kaplan (2012) recorded a low-density surface scatter of MSA and LSA material, including several chunks, a weathered broken limestone flake, several burnished retouched and utilized flakes, a burnished core, and an unworked quartzite cobble/manuport on a large patch of stony ground. Stone artefact scatters were present on Site 1 on the farm Olyvenhouts Drift (Dreyer 2006) in the district of Upington. These included MSA points with convergent ends and flakes with facetted platforms made of quartzite, chalcedony and banded ironstone (Dreyer 2006).

Rossouw (2013) found occasional occurrences of lithics made from brown jasper present as isolated surface occurrences in Section A-B on the farm Blaauwskop 36. Rossouw (2013) speculated that these lithics can be attributed to the LSA. The lithics are represented by irregular flakes and chips, they also appear to be fresh with little sign of intentional faceting or formal preparation. Kruger (2015) identified and recorded scatters of MSA stone tools, such as blades, points, scrapers and one adze at Eenduin farm near Keimoes. Similar stone tools were also recorded by Engelbrecht (2015) at the Blaauwskop settlement, approximately 15 km north-east of Keimoes.

Near Lennertsville, approximately 10 km from the farm Kousas, and 18-20 km from Blaauwskop, Kaplan (2018) documented a large silcrete core, an LSA silcrete retouched flake and one quartzite flake was documented along with a number of flaked stone tools. Kaplan (2008) noted that certain flake tools have been utilized or retouched. Some of the other finds include flakes of various sizes, bladelets and blade tools (e.g. backed pieces and points), and fine punch struck flakes as well as small round cores. Kaplan (2008) also documented four convex scrapers, three side scrapers, an adze, a large ESA core and weathered, retouched MSA flakes. He stated most of the tools are LSA in character, possibly from the 'Wilton Complex' (Kaplan 2008).

Other traces left on the landscape by prehistoric people include grinding grooves in the bedrock exposures at Dyason's Klip, 16.1 km north-east of Keimoes (Morris 2013). There are about five grinding surfaces along with a small number of stone tools in the locale. Morris (2013) also recorded lower grindstones adjacent to localized bedrock exposure, with a surface scatter of LSA flakes.

To the west of the study area on agricultural lot 2371 Kakamas South Settlement, Morris (2017b) reports the unexpected occurrence of a rock gong on a rocky granite-gneiss outcrop. Rock gongs (or lithophones) are rocks that ring when struck and are characterised by beating marks that reflect ancient use (Morris 2017b). According to Morris (2017b), the find is significant as it is the first rock gong to be identified from this part of the Northern Cape and on granite-gneiss. Often found in association with rock art, they are a feature of the LSA, with alleged ritual connotations (Morris 2017b).

Another interesting prehistoric find in the greater vicinity is the discovery of two kite-like features 22km north of Keimoes (Van der Walt & Lombard 2018). The large funnel-shaped features of undetermined age were constructed and shaped by organising local dolerite stones, sometimes incorporating in-situ dolerite outcrops/boulders. Kites are widely accepted as being utilised as hunting traps (Holzer *et al.* 2010 in Van der Walt & Lombard 2018). The ethno-historical records documented various kinds of hunting traps used by San hunter-gatherers, but the use of these funnel-shaped stone features by Stone Age herding communities (who also hunted) cannot be conclusively discounted (Van der Walt & Lombard 2018).

Furthermore, Morris (2014; Morris & Beaumont 1991) hypothesizes that the archaeological footprint of substantial herder and short-term hunter-gatherer encampments along the floodplain of the Orange River, may have been disrupted and destroyed by intensive farming alongside the river since colonial settlement.

5.2.2 Historical period

Before the European influx, the region of interest was predominantly settled by the Khoi-San and Koranna people. The subsequent settlement of European farmers and *trekboers* took place during the 18th and 19th centuries up until the 20th century. Khoikhoi farmers/hunter gatherers, Bushmen, Nama and Griqua had also resided in this region (Engelbrecht 2015).

The historic landscape around Blaauwskop Settlement has been the scene of conflict during the Korana wars of the 1860s and 1870s. Kanoneiland to the north of Blaauwskop Settlement, derives its name from the second northern frontier wars of 1879. Increased conflict between the Korana and the encroaching European livestock farmers resulted in the deployment of the Cape Artillery Regiment to bring stability to the area. Korana leader Klaas Lukas (also referred to in some sources as Klaas Pofadder) and his clan's men faced off against the colonial forces under the command of Commandant McTaggart between the 9th and 13th of April 1879. The Korana came under heavy artillery fire. Legend claims that Klaas Lukas instructed some of his soldiers to hollow out a tree trunk and to use it as a cannon barrel, and loaded it up with gunpowder, nails, horseshoes, pieces of cast-iron potsherds and other shrapnel material. The unfortunate result was that the tree trunk cannon exploded, leaving six Korana soldiers dead and several injured. The Korana was subsequently defeated and dispersed from the area (Engelbrecht 2015).

A report dating from 1879 names the hill south of Kanoneiland as Blaukop, and it was colloquially also known as "Piet Blou se Kop" (Cornelissen 1965).

In 1882, the first 81 farms north of the Gariep/Orange River between Groblershoop and the Augrabies Falls were allocated almost exclusively to *Basters* (a term referring to a group of people with mixed parentage, particularly white and Khoikhoi or slave and Khoikhoi, who were culturally European and who chose to move out of the Cape Colony to avoid social oppression) (Morris, 1992). During the late 19th century, more white people started moving to the Gordonia area and by the turn of the century, some 13 Afrikaner families had settled at Keimoes (De Beer 1992; Van der Walt 2015). The aftermath of the scorched earth policy of the South African War (Anglo-Boer War), resulted in many farmers moving to new areas, in search of greener pastures, and settlement next to the Gariep/Orange River provided ample irrigation for one's crops. Farmers who could afford it, bought land in Keimoes, while others who could not afford properties of their own became *bywoners* to other landowners, paying rent to live and work on the land, or they settled in Kakamas, a labour colony established to help uplift poor whites in the Gordonia area (Engelbrecht & Fivaz 2018; Van der Walt 2015). In 1995 there were only three *Baster* landowner families remaining in the Keimoes area, namely the Jansen family, the Loxtons and the Spangenbergs. The commercialisation of agricultural farming during the 20th century and the state's support for the capitalisation of white farmers in the area, probably contributed to many of the *Basters*' decision to sell their farms to emerging white farmers (Legassick 1996; Van der Walt 2015).

The development of canal systems played an important role in irrigating extensive vineyards and orchards within the region and the development of substantial agricultural initiatives within the area (Engelbrecht & Fivaz 2018). It has been central to the economic existence and development of Keimoes and surrounds since the 1880s. Dutch Reformed Church missionary Reverend C.H.W. Schröder and Special Magistrate for the Northern Border John H. Scott, are credited with formalising and extending the irrigation system. However, when Schröder first came to Upington in July 1883, there were already people in the area of Keimoes that used irrigation and planted fields. Moolman (1946) and Legassick (1996) mentions how the *Baster* farmers diverted river water to their gardens, albeit crudely. The historic water wheel at Keimoes, Main Street, was declared a provincial heritage site in 1978. The four historic water wheels situated along the Noordvoor, or northern furrow on Erven 103, 1057, 268 and 1467 Kakamas South Settlement, have also been designated as provincial heritage sites (https://sahris.sahra.org.za/declaredsites).

De Jong (2010) classifies the cultural landscape along the Gariep/Orange River as predominantly historic farmland. The affected area consists of working (operating) irrigation and grazing farms located in a typical Lower Orange River environment. These farms display heritage features that typically occur in the district, such as their large size, irrigation furrows and pipelines, fences, tracks, farmsteads, and irrigated fields. Farmsteads are clustered close to rivers and main roads (De Jong 2010). According to De Jong (2010) this class of landscape is of relatively low heritage sensitivity because it can absorb adverse effects of new development through some mitigation. Very little artefacts and/or structures dating to the historical/colonial period have been recorded on sites in the vicinity of the study area.

On Webley and Halkett's (2014) survey for the proposed construction of a PV (Photovaltaic) facility on the remainder of the farm Dyason's Klip 454, they recorded the mud-brick ruins of a small possible shepherd's hut, along with the trenches and abandoned equipment from the 20th century mining for tungsten on the property. They concluded that these remains are of low significance (Webley & Halkett 2014). Furthermore, Morris (2013) recorded a collapsed structure, a kraal and a nearby ash-heap close to Dyason's Klip, which he suggests could have been a farm-workers' dwelling. He also noted that there was another collapsed structure, with a possible porch. This

structure was more substantial than the first structure and yielded small quantities of glass, porcelain and metal, which most likely can be dated to the mid-20th century (Morris 2013).

It is important to note that the region was not only caught up in the Koranna War of 1879-1880, but also with other military activity such as the rising of 'rebels' in the aftermath of the South African War (Anglo-Boer War) and an incursion of German troops in January - February 1915 (Morris 2018). It is believed that any military settlement, specifically those related to the Koranna Wars, would have been located closer to the Gariep/Orange River (Webley & Halkett 2014). A *voortrekker* memorial monument was recorded approximately 1 km from the Orange River Wine Cellars, Kanoneiland (Engelbrecht 2015). Dreyer (2006) recorded, at Olyvenhouts Drift, a heavily soldered food tin that resembled British rations from the South African War (Anglo-Boer War) (1899-1902), he states that this could suggest that a British camp was in the vicinity during the war, however, its context is unconfirmed and thus mere speculation (Dreyer 2006). Van der Walt (2015) noted the position of a historical monument located on the farm Geelkop, north-west of Keimoes, called the "Rebellion Tree", associated with the activities of the 1914 rebellion against the South African participation in the First World War.

5.2.3 Oral history

No interviews with locals were conducted regarding the history of the area.

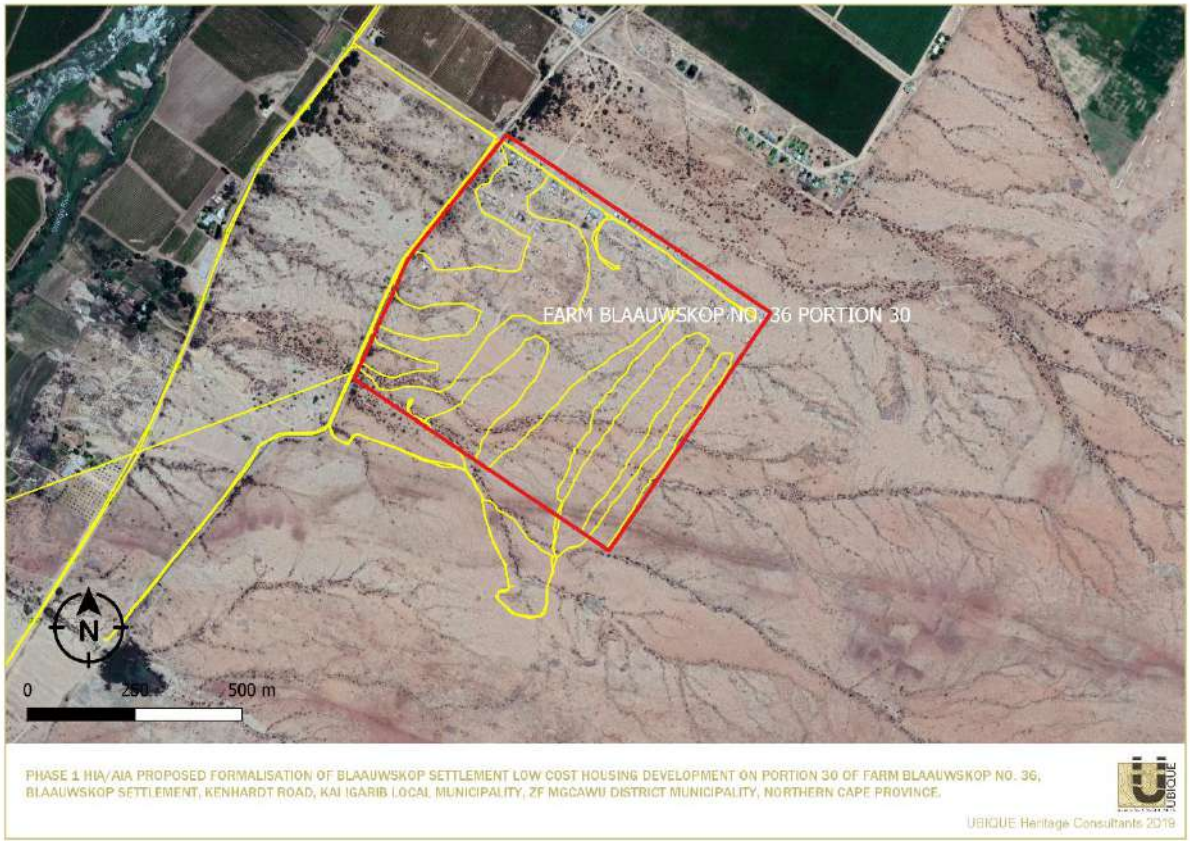


Figure 6 *Google Earth image showing survey track for housing development project, Farm Blaauwskop No. 36, Portion 30, Blaauwskop Settlement.*

6. IDENTIFIED RESOURCES AND HERITAGE ASSESSMENT

6.1 Surveyed area

The area surveyed for the impact assessment was dictated by the Google Earth map of the development footprint provided by the client. The site was approached from the south-west and a pedestrian survey was conducted in transects of approximately 30 m. Developed areas were only scoped due to disturbances. Surrounding areas were surveyed via vehicle.

6.2 Identified heritage resources

	Description		Period	Location	Field rating/ Significance
Stone Age					
1	Type lithic/s	Flake/debris	ESA to early MSA	28º 40.271' S 21º 06.253' E	Field Rating IV C Low significance
	Raw material	BIF			
	N in m².	N=1 in 1 m² in area of 50 m².			
	Context	None. Surface scatter.			
	Additional	Alluvial deposit.			
2	Type lithic/s	Scraper	MSA/ Early LSA	28º 42. 125' S 20º 56. 552' E	Field Rating IV C Low significance
	Raw material	BIF			
	N in m².	N=1 in 1 m² in area of 10 m².			
	Context	None. Surface scatter.			
	Additional	Alluvial deposit.			
3	Type lithic/s	Flakes, chips and points. Debris	ESA to early MSA	28º 40.187' S 21º 06.085' E	Field Rating IV C Low significance
	Raw material	BIF			
	N in m².	N=1 in 1 m² in area of 6 m².			
	Context	None. Low-density surface scatter.			
	Additional	Small concentration of artefacts.			
4	Type lithic/s	Prepared core	MSA/ Early LSA	28º 40.167' S 21º 06.087' E	Field Rating IV C Low significance
	Raw material	BIF			
	N in m².	N=1 in 1 m² in area of 60 m².			
	Context	None. Surface scatter.			
	Additional	Recorded on area cleared for local soccer field.			
5	Type lithic/s	Flakes, scraper and chips	ESA to early MSA	28º 40.117' S 21º 06.892' E	Field Rating IV C Low significance
	Raw material	BIF			
	N in m².	N=1 in 1 m² in area of 10 m².			
	Context	None. Surface scatter.			
	Additional	Washed down from slope			
6	Type lithic/s	Flakes, chunks and points. Debris.	ESA to early MSA	28º 40.431' S 21º 05.948' E	Field Rating IV C Low significance
	Raw material	BIF			
	N in m².	N=1-2 in 1 m² in area of 10 m².			
	Context	Surface scatter. Possible small knapping site.			
	Additional				
7	Type lithic/s	Chunk/core	ESA to early MSA	28º 40.519' S 21º 06.038' E	Field Rating IV C Low significance
	Raw material	BIF			
	N in m².	N=1 in 1 m² in area of 20 m².			
	Context	None. Surface scatter.			

	Additional	Washed down from slope.			
8	Type lithic/s	Bifacial hand axe and flakes	ESA to early MSA	**28° 40.389' S 21° 06.091' E**	Field Rating IV C Low significance
	Raw material	BIF			
	N in m².	N=1-2 in 1 m² in area of 10 m².			
	Context	Surface scatter. Possible knapping site.			
	Additional	Located adjacent dry riverine.			
Historical					
	Type of feature	**No historical features were recorded.**			N/A
	Material				
	N in m².				
	Context				
	Additional				
Graves					
	Grave markers	**No graves were recorded.**			N/A
	Inscription				
	Orientation				
	Inscription				
	Orientation				

6.3 Discussion

6.3.1 Archaeological features

Eight occurrences of lithics were recorded during the survey of the study area (Fig. 7 & Fig. 8). Five occurrences are located towards the south within the development footprint along dry riverine. The lithic assemblages consist of surface scatters of very few formal tools, predominantly untrimmed flakes, cores, stone working debris, and few scrapers made from the highly utilised banded ironstone formation (BIF), popular throughout the area (Morris 2012). The cultural material shows various degrees of weathering and is representative of the Early Stone Age, Middle Stone Age, and early Later Stone Age. The identified archaeological materials are of low significance, as the archaeological sample is small and without context, and therefor of little scientific value.

These Stone Age heritage finds are given a 'General' Protection C (Field Rating IV C). This means these sites have been sufficiently recorded (in the Phase 1). It requires no further action.

Three occurrences were recorded towards the south, outside the development footprint. Knapping debris is scattered in low concentrations in two areas adjacent to dry riverine. A potential Fauresmith bifacial hand axe, a lithic indicative of the transition between the Earlier and Middle Stone Ages, was recorded in this vicinity (Lotter *et al*. 2016; Underhill 2011). The identified archaeological materials are of low significance, as the archaeological sample is small and without context, and therefor of little scientific value.

These Stone Age heritage finds are given a 'General' Protection C (Field Rating IV C). This means these sites have been sufficiently recorded (in the Phase 1). It requires no further action.

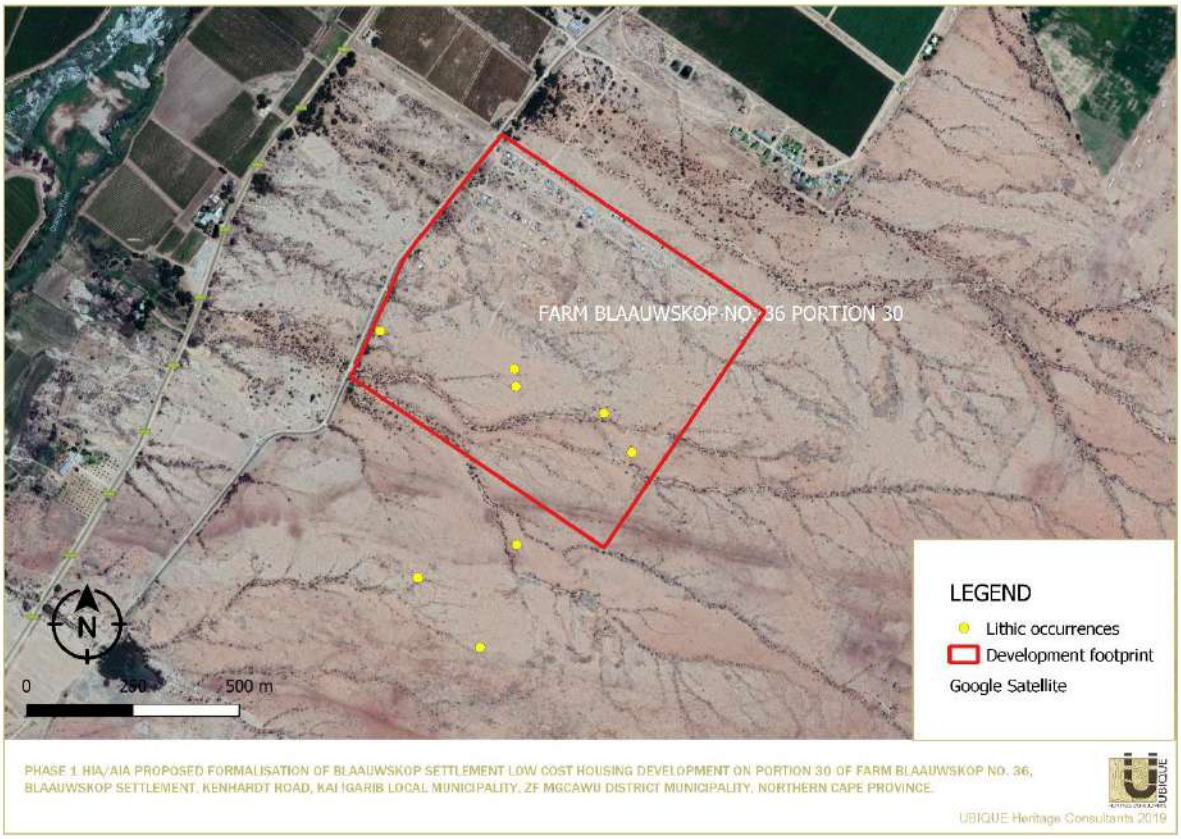
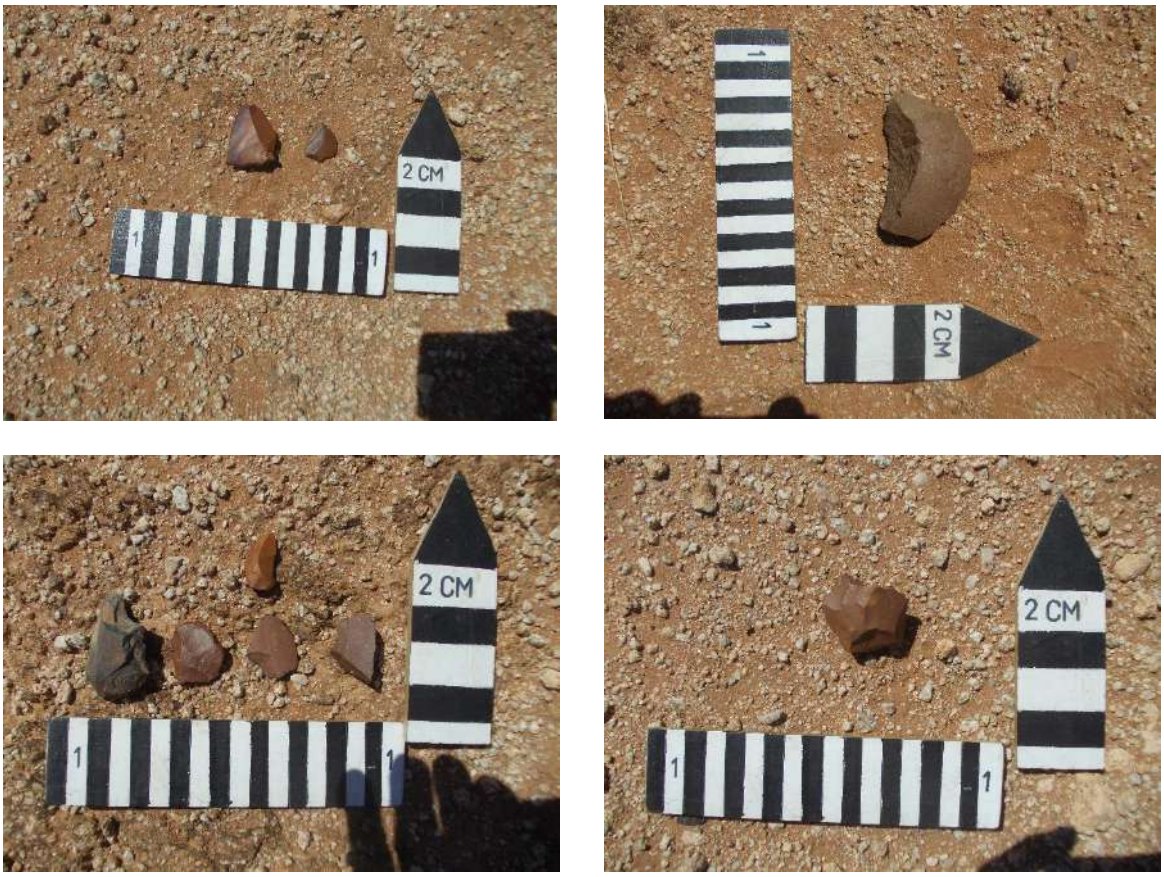


Figure 7 *Lithic occurrences within, and near study area.*



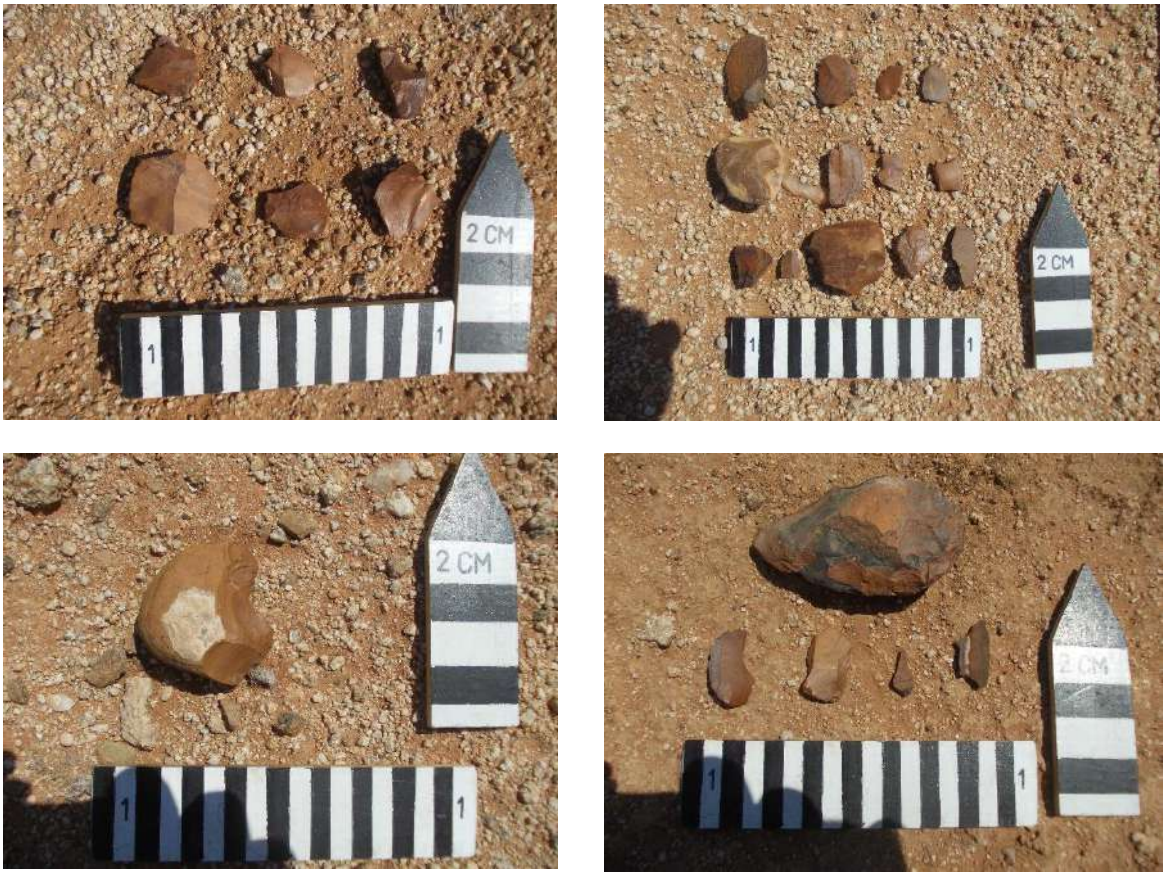


Figure 8 *Lithics found within the development footprint and outside.*

6.3.2 Historical features

No significant historical features were identified within the study area.

6.3.3 Graves

No formal or informal graves were identified in the study area.

6.3.4 Palaeontological resources

The proposed low-cost housing development is underlain by Precambrian metamorphic and igneous basement rocks of the Namaqua-Natal Metamorphic Province (not fossiliferous) and superficial Late Cenozoic deposits and (largely not fossiliferous), both of which has a low to very low palaeontological sensitivity. The impact of the development on the Fossil heritage is considered to be low (Butler 2019). Elize Butler from Banzai Environmental proposes exemption from doing a full paleontological study for this project (see Appendix 1).

7. RECOMMENDATIONS

Based on the assessment of the potential impact of the development on the identified heritage, the following recommendations are made, taking into consideration any existing or potential sustainable social and economic benefits:

1. The lithic traces on the landscape of the study area are of low significance and the impact of the development on these resources are inconsequential. No other heritage was identified. Therefore, no further mitigation is required, and from a heritage point of view we recommend that the proposed development can continue.

2. Due to the zero palaeontological significance of the area, no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required. It is considered that the development of the proposed development is deemed appropriate and feasible and will not lead to detrimental impacts on the palaeontological resources of the area as the igneous rocks underlying the site are not fossiliferous. It is therefore recommended that the project be exempt from a full Paleontological Impact Assessment (Butler 2018).

3. Although all possible care has been taken to identify sites of cultural importance during the investigation of study areas, it is always possible that hidden or sub-surface sites could be overlooked during the assessment. If during construction, any possible discovery of finds such as stone tool scatters, artefacts, human remains, or fossils are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find. UBIQUE Heritage Consultants and its personnel will not be held liable for such oversights or for costs incurred as a result of such oversights.

8. CONCLUSION

This HIA has identified no significant heritage resources on Farm Blaauwskop No. 36, Portion 30, Blaauwskop Settlement. Kai !Garib Municipality, Mgcawu District Municipality, Northern Cape as set out in the report. In the development footprint are no archaeological, historical or cultural sites, or paleontological resources that will be impacted on negatively by the proposed development.

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APPENDIX A

RECOMMENDED EXEMPTION FROM FURTHER PALAEONTOLOGICAL STUDIES FOR PROPOSED FORMALISATION OF BLAAUWSKOP LOW COST HOUSING DEVELOPMENT, KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, Z.F. MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE.

RECOMMENDED EXEMPTION FROM FURTHER PALAEONTOLOGICAL STUDIES FOR PROPOSED FORMALISATION OF BLAAUWSKOP LOW COST HOUSING DEVELOPMENT,

KENHARDT ROAD, KAI !GARIB LOCAL MUNICIPALITY, ZF MGCAWU DISTRICT MUNICIPALITY, NORTHERN CAPE PROVINCE

Prepared by

BANZAI ENVIRONMENTAL (PTY) LTD

24 February 2019

BACKGROUND

EnviroAfrica CC has been employed by Kai !Garib Municipality, ZF Mgcawu District Municipality, to undertake the NEMA [National Environmental Management Act, 1998 (Act no 107 of 1998 as amended in 2014)] for the Application for the Environmental Authorization Process for the proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape (Figure 1 -3).

This report is a **recommended exemption** from further Palaeontological studies as the proposed development site is underlain by Precambrian metamorphic and igneous basement rocks of the Namaqua-Natal Metamorphic Province as well as superficial Late Cenozoic deposits, both of which has a low to very low palaeontological sensitivity. And thus, the impact of the development on the Fossil heritage is considered to be LOW.

OUTLINE OF PROPOSED DEVELOPMENT

The application process consists of the following activities:

- The rezoning and the subdivision of 500 Erven for low cost houses;
- Associated infrastructure e.g. water, electricity, sewage, solid waste removal; with an extent of approximately 50 ha.

GEOGRAPHICAL LOCATION OF THE SITE

The proposed site is located approximately 13.5km north-east of Keimoes and the R359 Road is approximately 435m west of the site. The site co-ordinates are **28° 40’ 9.64” S, 21° 6’ 7.49” E**.

- The development is located on topographical Map 2821 CA

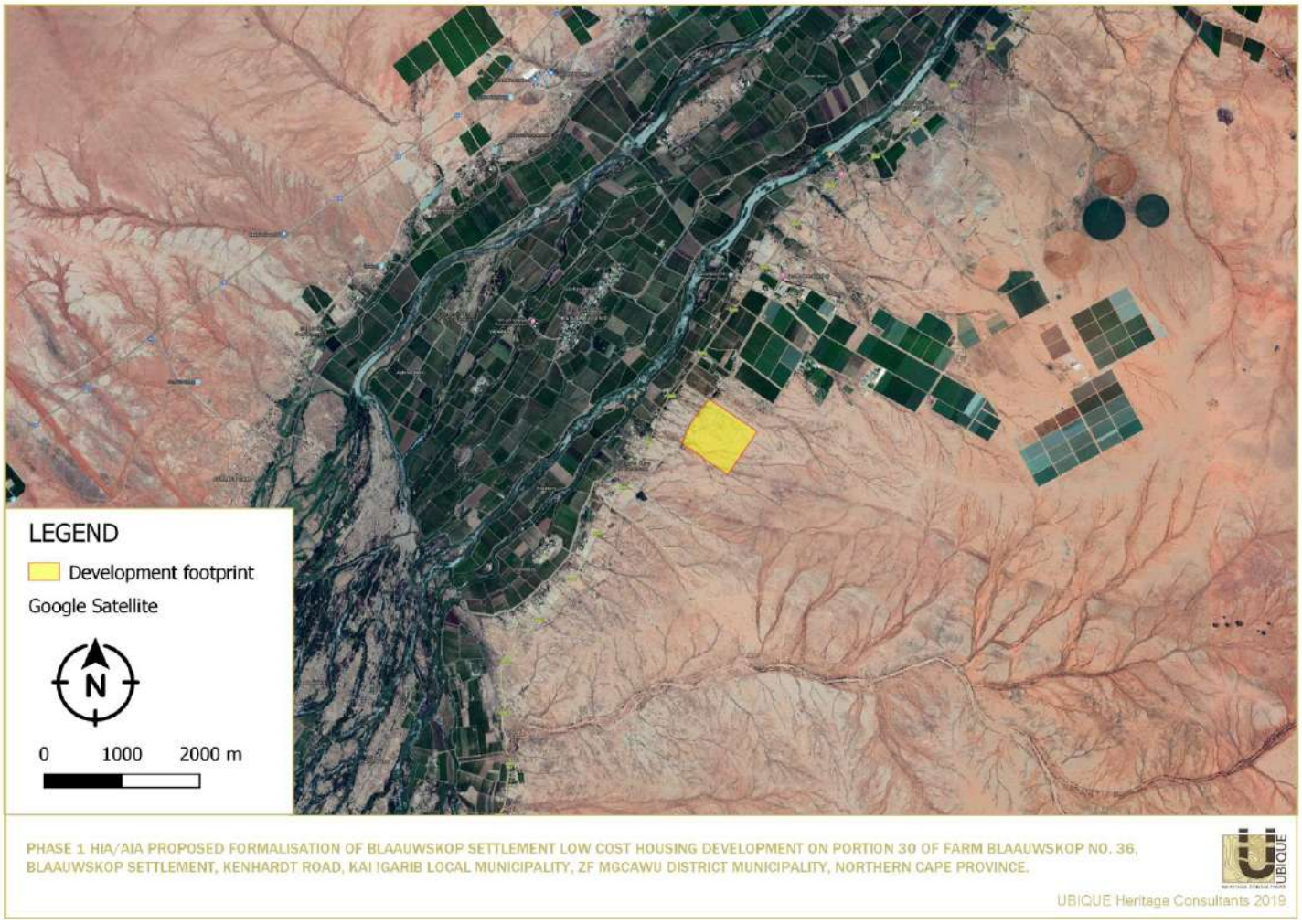

***Figure 1**: Google Earth Image of the proposed of formalisation Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape. The map provided by Ubique Heritage Consultants.*

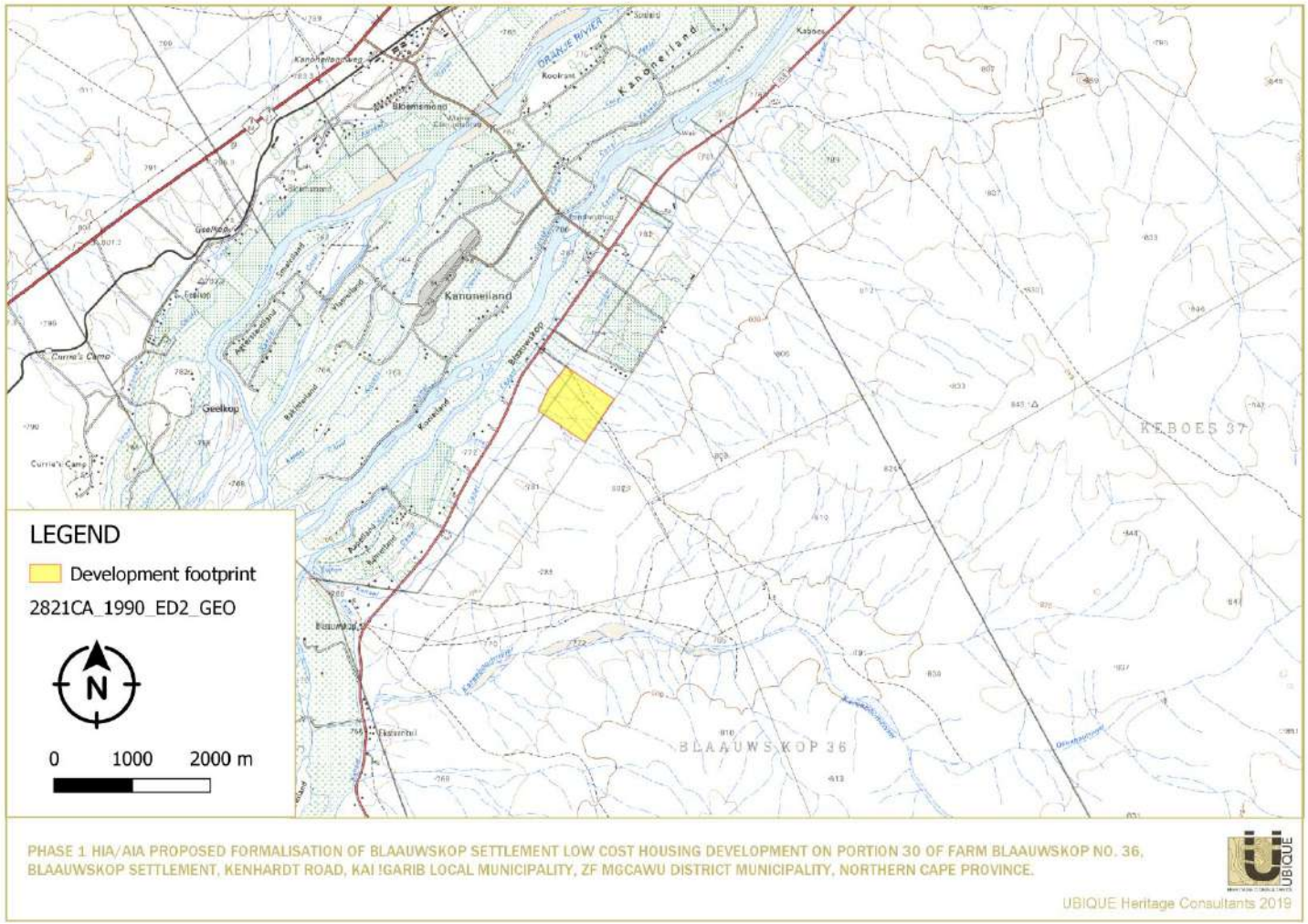

***Figure 2**: Topographical map of the proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape. The map provided by Ubique Heritage Consultants.*

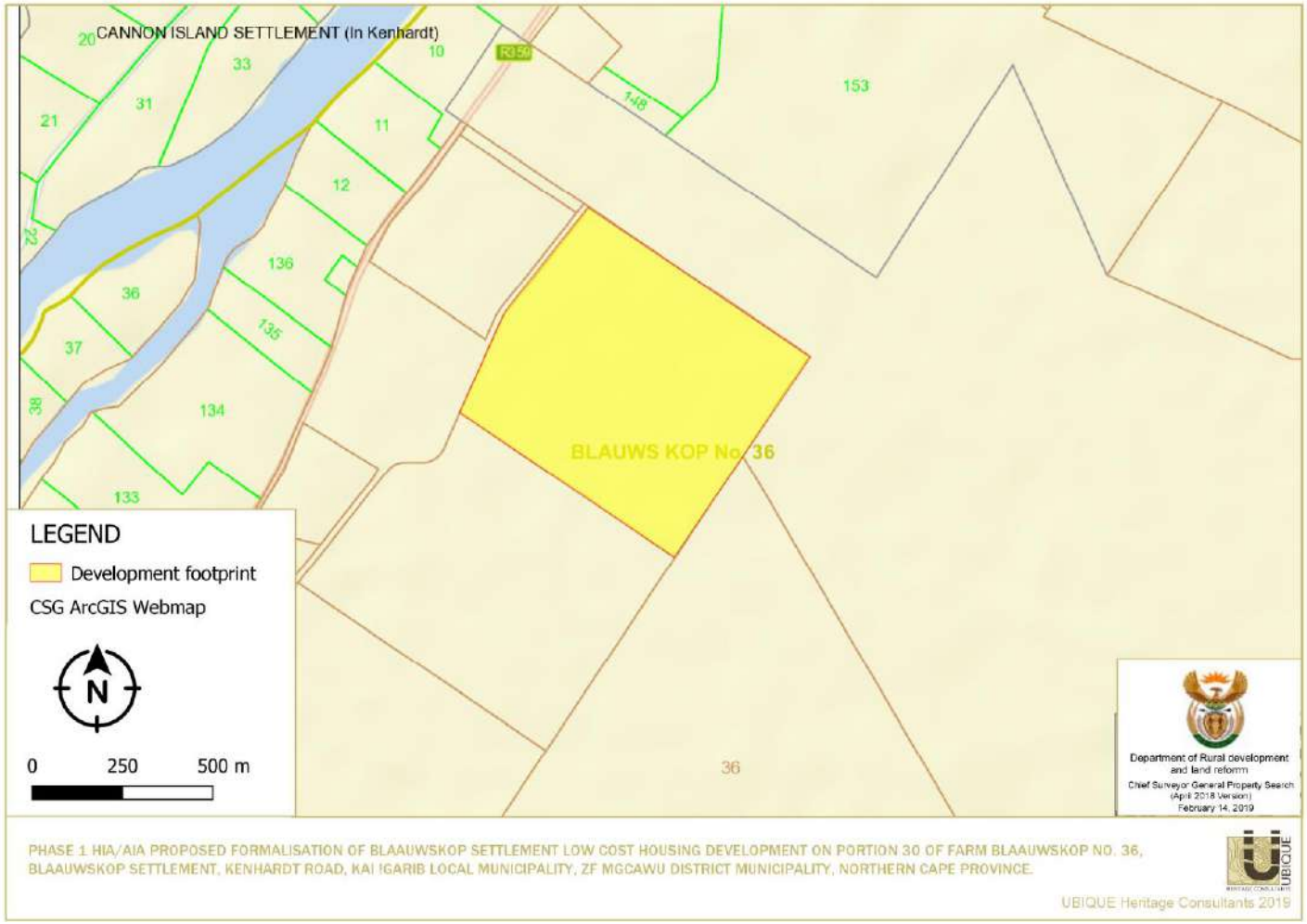

***Figure 3**: Detailed layout of the proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape. The map provided by Ubique Heritage Consultants.*

GEOLOGICAL AND PALAEONTOLOGICAL HERITAGE

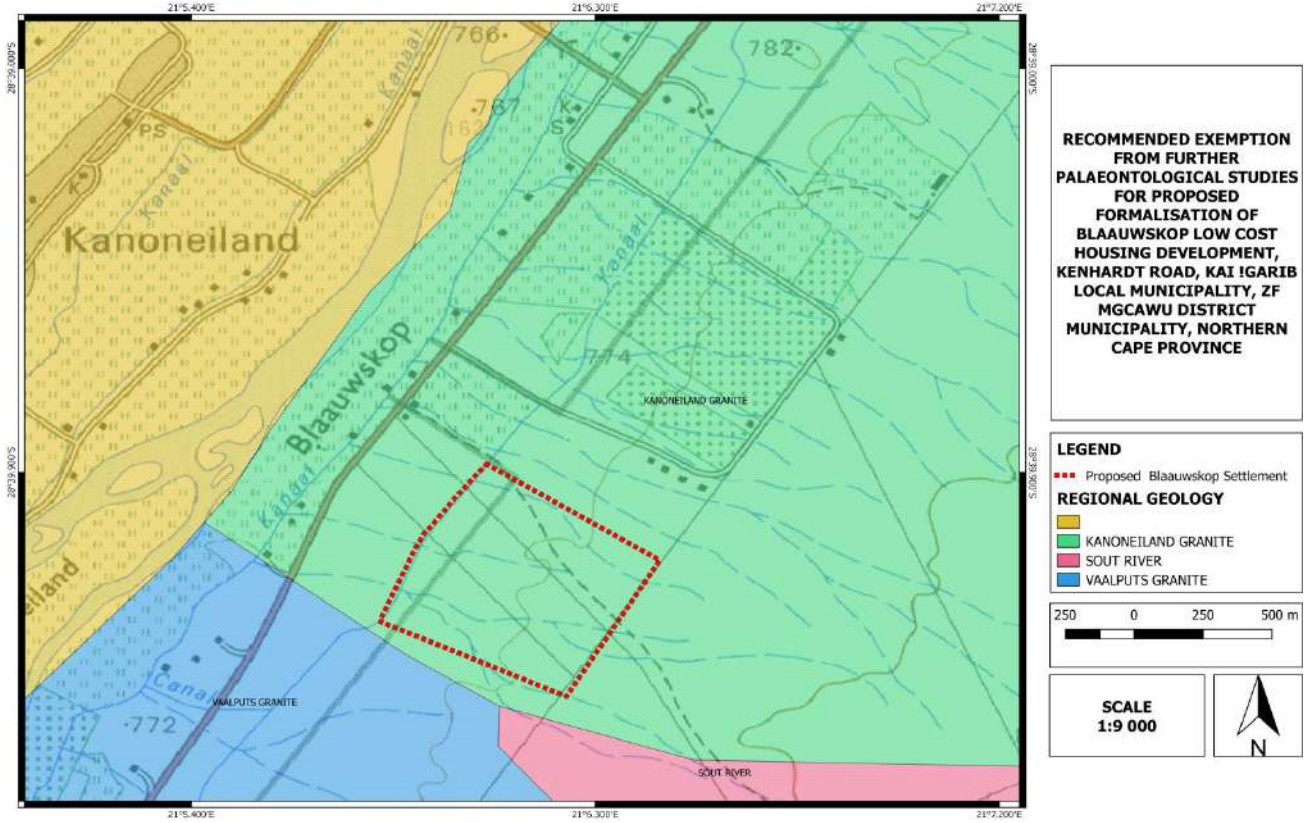

Figure 4: *The surface geology of the proposed formalisation of Blaauwskop Settlement low cost housing development on Portion 30 of Farm Blaauwskop No. 36, Blaauwskop Settlement, Kenhardt Road, Kai !Garib Municipality, ZF Mgcawu District Municipality, Northern Cape. The study area is entirely underlain by the Precambrian Kanonkop Granite of the Keimoes Suite as well as late Cenozoic superficial deposits. The map was drawn by QGIS Desktop 2.18.18.*

The proposed *Blaauwskop Settlement low cost housing development* is located north-east of Keimoes and just south of the Orange River. The area consists mostly of arid, terrain with small sporadic flowing streams, and alluvial islands, banks and basement rock outcrops associated with the Orange River. Bedrock exposures away from the river are typically high, while coarse, poorly-sorted alluvial and colluvial gravels are probably mantling the hill slopes and stream valleys.

The proposed low-cost housing development is underlain by Kanoneiland Granite of the Keimoes Suite (Figure 4). The latter consists of Precambrian metamorphic and igneous basement rocks of the Namaqua-Natal Metamorphic Province. These basement rocks are all unfossiliferous. Kanoneiland Granite comprises of medium- to coarse-grained, moderately foliated, mesocratic granite with scattered phenocrysts.

The Precambrian basement rocks within the study area are covered with various other coarse to fine-grained **superficial deposits** namely**.**

- alluvium and calcrete hardpans of intermittently flowing streams.
- colluvium (slope deposits),
- rocky soils, down washed surface gravels,
- sheet wash.

These younger deposits may include patches of aeolian sands of the **Gordonia Formation** (**Kalahari Group**; and Quaternary to Recent in age).

4. CONCLUSIONS & RECOMMENDATIONS

The proposed low-cost housing development is underlain by Precambrian metamorphic and igneous basement rocks of the Namaqua-Natal Metamorphic Province (unfossiliferous) and superficial Late Cenozoic deposits and (largely unfossiliferous), both of which has a low to very low palaeontological sensitivity. And thus, the impact of the development on the Fossil heritage is considered to be LOW.

It is therefore recommended that exemption from further specialist palaeontological studies and mitigation be granted for this development.

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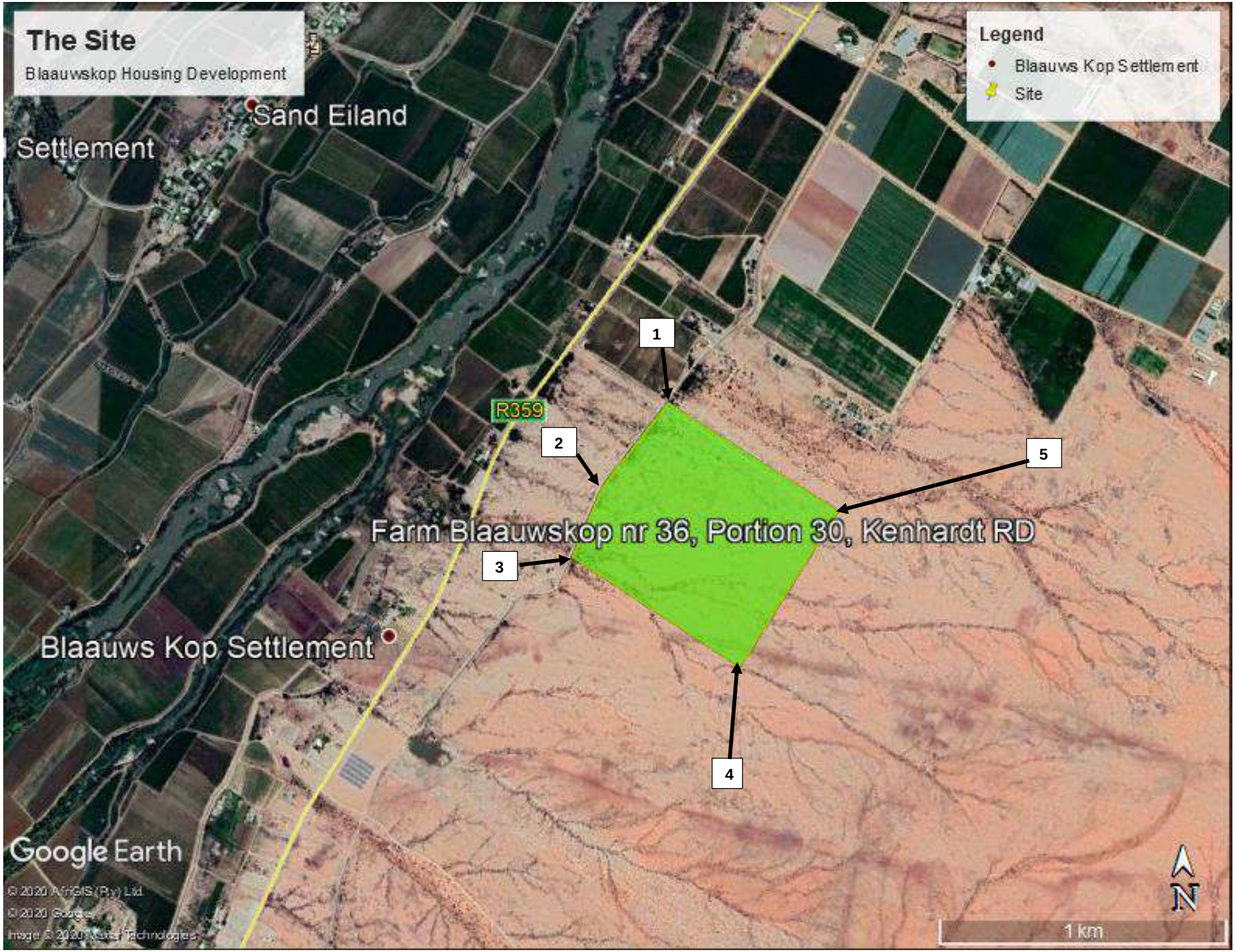
Appendix 4

List of Co-ordinates – Blaauwskop Low Cost Housing Development

	Point	Latitude (S) (DDMMSS)			Longitude (E) (DDMMSS)		
Coordinates of corner points of study area	1	28°	39'	52.33"	21°	6'	4.31"
	2	28°	40'	1.96"	21°	5'	55.58"
	3	28°	40'	10.66"	21°	5'	51.09"
	4	28°	40'	23.66"	21°	6'	13.05"
	5	28°	40'	5.60"	21°	6'	26.79"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Farm Blaauwskop nr 36, Portion 30, Kenhardt RD
Blaauws Kop Settlement
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OF PORTION 29
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REG DIV KENHARDT RD

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PREV DESCRIPTION
DIAGRAM DEED NO T70957/2003
EXTENT 50.0020 H
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FARM NAME BLAAUWS KOP

NO INTERDICTS

DOCUMENTS	HOLDER	AMOUNT	O/P/A	SCAN/MICRO REF	MMDD
CONVERTED FROM CTN					

OWNER DETAILS

FULL NAME & SHARE	PURCH DATE	AMOUNT/REASON	O/P/A	IDENTITY	DATE OF BIRTH	TITLE DEED	MMDD	SCAN/MICRO REF
MUN KAI GARIB						T62545/2006CTN	0815	
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* O/P/A - O - MULTIPLE OWNER P - MULTIPLE PROPERTY A - MULTIPLE OWNER AND PROPERTY

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BISSET BOEHMKE MCBLAIN ING

Opgestel deur my

TRANSPORTBESORGER
R ELS

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R 55,00 ✓

Gesertifiseer 'n ware afskrif in terme van die bepalings van
Certified a true copy in terms of the provisions of Regulation
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66 under the Deeds Registries Act, no 47 of 1937

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SLEGS VIR INLIGTING

Registrasiekantoor
Deeds Registry

2020 -03- 02

Datum/Date.....

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REGISTRATEUR VAN AKTES
REGISTRAR OF DEEDS

UITGEREIK VIR INLIGTING
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voor my verskyn het, REGISTRATEUR VAN AKTES, te KAAPSTAD, hy die genoemde komparant synde behoorlik daartoe gemagtig deur 'n Volmag aan hom verleen deur

JAN JOHANNES JORDAAN
IDENTITEITSNOMMER 510108 5073 08 9
ONGETROUD

geteken te UPINGTON op 27 JUNIE 2006

En genoemde Komparant het verklaar dat sy prinsipaal, op 25 MEI 2006, waarlik en wettiglik verkoop by Privaat ooreenkoms, en dat hy, in sy voorgenoemde hoedanigheid hierby sedeer en transporteer aan en ten gunste van

KAI! GARIB MUNISIPALITEIT

Hul opvolgers in titel of regverkrygendes,
titel of Regverkrygendes in volkome en vrye eiendom,

GEDEELTE 30 (GEDEELTE VAN GEDEELTE 29) VAN DIE PLAAS BLAUWS KOP NR 36),

GELEë IN DIE KAI! GARIB MUNISIPALITEIT,

AFDELING KENHARDT, PROVINSIE NOORD-KAAP;

GROOT: 50,0020 (VYFTIG KOMMA NUL NUL TWEE NUL) HEKTAAR;

AANVANKLIK OORGEDRA EN NOG STEEDS GEHOU KRAGTENS TRANSPORTAKTE NR T 70957/2003 MET KAART LG NR 1197/2002 WAT DAAROP BETREKKING HET.

I. **Wat betref die figuur x B C y op Kaart Nr 1197/2002 hierby aangeheg:**

A. Onderhewig aan die voorwaardes waarna verwys word in die gesegde Akte van Transport Nr T 4512/1915 en

B. Aan die volgende voorwaarde daarin bevat, naamlik :

"The Appearer's Constituent and his Successors in title or assigns shall have free and undisturbed access to the now-existing three drinking places on the Orange River and to use the water for domestic purposes and stock farming purposes whenever there is not sufficient water for the said purposes in the water furrow between the remainder of the said farm and the Orange River."

die genoemde Komparant se Prinsipaal synde John Harms van Niekerk as eienaar van die restant van die gesegde plaas "Blaauwskop" onder Grondbrief gedateer 17 November 1893 (Kenhardt Erfpagte Vol 1 Nr 14);

C. Verder onderhewig aan en geregtig op voordele onder die serwituut waarna verwys word in die endossement gedateer 8 Junie 1940, en 30 November 1942, op die gesegde Akte van Transport Nr T 4445/1940, watter endossemente soos volg lui :-

Gedateer 8 Junie 1940

"Restant – Registrasie van Serwituut

Kragtens Akte van Transport Nr T 5550/1940 gedateer 8.6.40 is die eienaar van die grond gehou daaronder geregtig op weireg op die restant van die grond hieronder gehou en is belet (1) om haar water- en weiregte te verkoop ens., (2) om grond te verkoop aan Naturelle ens., (3) om geen handels- of dranklisensies te verkry sonder die toestemming van die eienaars van die restant hieronder gehou onderworpe aan die voorwaardes en soos meer breedvoerig blyk uit die gesegde Akte van Transport."

Gedateer 30 November 1942

"Restant – Registrasie van Serwituut

Die volgende Transport Aktes No. 14350/42, No.T14351/42, No 22302/54, No 9806/58 en No14230/62 is ook onderhewig aan die terme en voorwaardes van die serwituut endossement gedateer 8 Junie 1940 hierop."

D. Verder onderhewig aan die nuut opgelegde voorwaarde, dat die Transportgewers die gesegde Gustav Peter Lutz en Stephanus Malan besigheid doende in vennootskap onder die firma naam LUTZ & MALAN, in aandele van twee derdes en eenderde respektiewelik alle Mineraleregte, in sover dit nie reeds deur die Staat gereserveer is nie, reserveer onderhewig aan die volgende :-

"Die Transportgewers hou die reg van toegang tot die verkoopte gronde uit vir hulle-self en vir hulle werknemers vir alle prospekteermyn of delfbedrywighede; en vir die oprigting van alle masjienerie in verband daarmee, asook die reg op die gebruik van water uit die Blaauwskop Besproeiingsvoor vir sodanige bedrywighede vry van betaling. Die Transportgewers sal egter verplig wees om redelike vergoeding te betaal soos onderling ooreengekom te word vir skade aan die transportnemers se eiendom aangerig deur die prospekteer- myn- of delfbedrywighede, en ingeval die partye nie tot 'n ooreenkoms kan geraak omtrent die bedrag van vergoeding wat betaal moet word nie, sal hulle verplig wees om die saak aan arbitrasie te onderwerp in terme van die arbitrasiewette van tyd tot tyd van toepassing in die Kaap-provinsie."

Die volgende mineraleregte is aan die Kroon gereserveer in die Grondbrief van die gesegde plaas "Blaauwskop" uitgereik ten behoewe van J.H.van Niekerk op 17 November, 1893 (Kenhardt Erfpagte Boek 1 Nr.14), voorwaarde V waarvan as volg lui :-

"V. That all rights to gold, silver and precious stones found or discovered at any time on or in the said land shall be reserved to the Crown, together with a right of ingress to and egress from any mines or works undertaken for mining or

prospecting purposes by any person or persons authorised by the Commissioner, but subject always to the provisions of the Act No.44 of 1887 or any other Act to be hereafter passed with regard to prospecting and mining for precious stones and minerals."

E. Onderhewig verder aan die endossement gedateer 20 Junie 1963 op Transportakte T 8791/1963, welke lees as volg :

"Sertifikaat van Minerale Regte Nr 12/1963 uitgereik ingevolge Art 71 van Wet 47 van 1937, ten opsigte van alle minerale regte uitgesonderd goud, silwer en edelgesteentes wat aan die Staat gereserveer is."

F. Onderhewig verder aan die endossement gedateer 16.11.73 op die A/K afskrif, welke lees as volg :

"Endossement kragtens Artikel 31 (6) van Wet Nr.47 van 1937 (soos gewysig).

'n Gedeelte van die eiendom hierin vermeld in para 1 groot ± 1,0050 ha is onteien deur die Afdelingsraad Kenhardt kragtens Art 130 van Ord 15/1952. Vide onteieningskennisgewing Nr.R/2/6 d.d 29.5.71 geliasseer as onteienings caveat EX 488/72 planne in tweevoud geliasseer hiermee."

G. Onderhewig verder aan die endossement gedateer 6 Desember 1988 op Transportakte Nr T 8791/1963, welke lees as volg :

(a) 'n ewigdurende serwituut van waterleiding (d.m.v. kanaal) oor 1,3800 ha.

(b) 'n ewigdurende serwituut van waterleiding (d.m.v. 'n duikpyp) oor 3500 meter.

(c) 'n ewigdurende serwituut van waterleiding (d.m.v. pyplyn) oor 1050 vierkante meter.

gesedeer aan REPUBLIEK VAN SUID – AFRIKA deur Akte van Sessie Nr. K1147/1989."

II. Wat betref die figuur x y D E F G A op Kaart Nr. 1197/2002 hierby aangeheg :

ONDERHEWIG AAN DIE VOLGENDE VOORWAARDES

A. Onderhewig verder aan die voorwaardes waarna verwys word in Akte van Transport Nr T 4512/1915, en

B. Aan die volgende voorwaarde daarin bevat, naamlik :-

"The Appearer's Constituent and his Successors in title or assigns

shall have free and undisturbed access to the now-existing three drinking places on the Orange River and to use the water for domestic purposes and stock farming purposes whenever there is not sufficient water for the said purposes in the water furrow between the remainder of the said farm and the Orange River."

die genoemde Komparant se Prinsipaal synde John Harms van Niekerk as eienaar van die restant van die gesegde plaas "Blaauwskop" onder Grondbrief gedateer 17 November 1893 (Kenhardt Erfpagte Vol.1 Nr.14) ;

C. .....

D. .....

E. Verder onderhewig aan en geregtig op voordele onder die Serwituut waarna verwys word in die endossement gedateer 8 Junie 1940 op Sertifikaat van Nedersettings Titel Nr 4446/1940, wat soos volg lui :-

"REGISTRASIE VAN SERWITUUT

Kragtens Aktes van Transport Nos. 5550 ged. 8.6.40, 14350-14351/1942, 2491/1943, 3176/1943, 3521/1944, 12881/1944, 18466/1944, 2417/45; 6592/46; 11322/47, 9806/58, T14230/62 is voorsiening gemaak vir die oprigting van 'n besproeiingsraad vir die beheer van die Blaauwskop besproeiingsvoor tesame met bygaande regte, en regte van water uit die gesegde voor ten gunste van die gesamentlike eienaars. Soos meer breedvoerig sal blyk uit die gesegde Akte van Transport."

F. Verder onderhewig aan die nuut opgelegde voorwaarde, dat die Transportgewers die gesegde Gustav Peter Lutz en Stephanus Malan besigheid doende in vennootskap onder die firma naam LUTZ & MALAN, in aandele van twee derdes en eenderde respektiewelik alle Mineraleregte, in sover dit nie reeds deur die Staat gereserveer is nie, reserveer onderhewig aan die volgende :-

"Die Transportgewers hou die reg van toegang tot die verkoopte gronde uit vir hulle-self en vir hulle werknemers vir alle prospekteermyn of delfbedrywighede; en vir die oprigting van alle masjienerie in verband daarmee, asook die reg op die gebruik van water uit die Blaauwskop Besproeiingsvoor vir sodanige bedrywighede vry van betaling. Die Transportgewers sal egter verplig wees om redelike vergoeding te betaal soos onderling ooreengekom te word vir skade aan die transportnemers se eiendom aangerig deur die prospekteer – myn – of delfbedrywighede, en ingeval die partye nie tot 'n ooreenkoms kan geraak omtrent die bedrag van vergoeding wat betaal moet word nie, sal hulle verplig wees om die saak aan arbitrasie te onderwerp in terme van die arbitrasiewette van tyd tot tyd van toepassing in die Kaap – provinsie."

Die volgende mineraleregte is aan die Kroon gereserveer in die Grondbrief van die gesegde plaas "Blaauwskop" uitgereik ten behoewe van J.H. van Niekerk op 17 November, 1893 (Kenhardt

Erfpagte Boek 1 Nr.14), voorwaarde V waarvan as volg lui :-

"V. That all rights to gold, silver and precious stones found or discovered at any time on or in the said land shall be reserved to the Crown, together with a right of ingress to and egress from any mines or works undertaken for mining or prospecting purposes by any person or persons authorised by the Commissioner, but subject always to the provisions of the Act No. 44 of 1887 or any other Act to be hereafter passed with regard to prospecting and mining for precious stones and minerals."

G. Onderhewig aan die endossement gedateer 20 Junie 1963 op Transportakte T 8791/1963, welke lees as volg :

"Sertifikaat van Minerale Regte Nr. 12/1963 uitgereik ingevolge Art 71 van Wet 47 van 1937, ten opsigte van alle minerale regte uitgesonderd goud, silwer en edelgesteentes wat aan die Staat gereserveer is."

H. Onderhewig verder aan die endossement gedateer 16.11.73 op die A/K afskrif, welke lees as volg :

"Endossement kragtens Artikel 31 (6) van Wet Nr. 47 van 1937 (soos gewysig).

'n Gedeelte van die eiendom hierin vermeld in para 2 groot ± .,2352 ha is onteien deur die Afdelingsraad Kenhardt kragtens Art 130 van Ord. 15/1952. Vide onteieningskennisgewing Nr.R/2/6 d.d. 29.5.71 geliasseer as onteienings caveat EX 489/72 planne in tweevoud geliasseer hiermee."

I. Onderhewig verder aan die endossement gedateer 16.11.73 op die A/K afskrif, welke lees as volg:

"Endossement kragtens Artikel 31(6) van Wet Nr 47 van 1937 (soos gewysig)

'n Ged van die eiendom hierin vermeld in para 2 groot 1,0746 ha is onteien deur die Afdelingsraad Kenhardt kragtens Art 130 van Ord 15/1952. Vide onteieningskennisgewing Nr R/2/6 d.d. 29.5.71 geliasseer as onteienings caveat EX 498/72 planne in tweevoud geliasseer hiermee.

J. Onderhewig aan die endossement gedateer 27.9.1984 op Transportakte T8791/1963, welke lees as volg :

"ENDOSSEMENT

Kragtens Akte van Transport T 48698/1984 hede gedateer is die Restant van die hierinvermelde eiendom geregtig op 'n serwituut pad 7 meter wyd oor Perseel 122 en Perseel 146 daar deur getransporteer die hele Noord Oostelike grens waarvan aangedui is op Kaart No.5382/1982 en 5349/1982 daaraan geheg deur die lyn A.B. onderskeidelik."

K. Verder onderhewig aan die endossement gedateer 24.9.1987 op Transportakte T8791/1963, welke lees as volg :

"RESTANT PARA 2.

Kragtens Transportakte T45713/1987 is die Restant van Ged. 3 van die Plaas Blaauwskop Nr. 36 geregtig op die volgende voorwaarde oor Perseel 95 Blaauwskop Nedersetting :

"Geen Handels – en Dranklisensies sal verkry, toegelaat of uitgeneem word sonder die skriftelike toestemming van die transportgewer of sy regsopvolgers nie."

soos meer volledig sal blyk uit gesegde Transportakte.

L. Verder onderhewig aan die endossement gedateer 24.9.1987 op Transportakte T8791/1963, welke lees as volg :

"RESTANT PARA 2.

Kragtens Transportakte T45715/1987 is die Restant van Ged.3 van die Plaas Blaauwskop Nr. 36 geregtig op die volgende voorwaarde oor Perseel 95 Blaauwskop Nedersetting :

"Geen handels- en dranklisensies sal verkry, toegelaat of uitgeneem word sonder die skriftelike toestemming van die transportgewer of sy regsopvolgers nie."

soos meer volledig sal blyk uit gesegde Transportakte.

M. Onderhewig verder aan die endossement gedateer 6 Desember 1988 op Transportakte T 8791/1963, welke lees as volg :

"(a) 'n ewigdurende serwituut van waterleiding (d.m.v. kanaal) oor 11,6800 ha.

(b) 'n ewigdurende serwituut van waterleiding (d.m.v. duikpyp) oor 1,2200 ha.

c) 'n ewigdurende serwituut van waterleiding (d.m.v. duikpyp) oor 2300 meter.

(d) 'n ewigdurende serwituut van waterleiding (d.m.v. 8 pypleidings) oor 9450 vierkante meter.

gesedeer aan REPUBLIEK VAN SUID-AFRIKA deur Akte van Sessie Nr K1147/1989."

N. Verder onderhewig aan die endossement gedateer 25 Mei 1990 op Transportakte T8791/1963, welke lees as volg :

"Kragtens T29320/90 is Para 2 hierin beskryf, geregtig op 'n padserwituutgebied soos aangetoon op onderverdelingskaart Nr.5424/89, oor perseel 150 Blaauws Kop Nedersetting, groot 16,9640 ha soos meer volledig sal blyk uit bovermelde transportakte."

O. ONDERHEWIG aan die voorwaarde dat bogemelde eiendom getransporteer word geregtig op 'n padserwituut 6 meter wyd oor die Restant van Gedeelte 3 van die Plaas Blaauws Kop Nr.36, geleë in die Kai ! Garib Munisipaliteit, Afdeling Kenhardt, Provinsie Noord-Kaap, Groot 392,8639 hektaar oor roetes soos deur die transportgewer aan die transportnemer uitgewys te word.

WESHALWE die komparant afstand doen van al die regte en titel wat

TRANSPORTGEWER

voorheen op genoemde eiendom gehad het, en gevolglik ook erken het dat hy geheel en al van die besit daarvan onthef en nie meer daartoe geregtig is nie en dat, kragtens hierdie akte, bogenoemde

TRANSPORTNEMERS

Hul opvolgers in titel of regverkrygendes, tans en voortaan daartoe geregtig is, ooreenkomstig plaaslike gebruik, behoudens die regte van die Staat en ten slotte erken dat die munisipale waardasie van die eiendom die bedrag van R19 177,00 (NEGENTIEN DUISEND EEN HONDERD SEWE EN SEWENTIG RAND) beloop.

TEN BEWYSE WAARVAN ek, genoemde Registrateur, tesame met die Komparant hierdie Akte onderteken en dit met die ampseël bekragtig het.

Onderteken, verly en met die ampseël bekragtig op die kantoor van die Registrateur van Aktes te Kaapstad op 15/8/2006

a/a.

In my teenwoordigheid

REGISTRATEUR VAN AKTES

REGISTER OF INTERESTED AND AFFTECTED PARTIES (I&APs)

EnviroAfrican Ref: 0489

EnviroAfrica

Environmental Planning and Impact Assessment Consultants

Omgewingsbeplanning en Impakbeoordeling Konsultante

I&AP List for: Blaauwskop Housing | **DENC Ref:**

Advert Placed: Kalahari Bulletin | **Date:** 17 January 2019

No.	Title	Initials/Name	Surname	Affiliation	Postal Address	Town/City	Code	Telephone	Fax	E-mail
1. Applicant										
1.1	Dr	Johnny	MacKay	Kai !Garib Municipality (Municipal Manager)	Private Bag X6	Kakamas	8870	(054) 461 6700	(054) 461 6401	mackayj@kaigarib.gov.za mm@kaigarib.gov.za
2. Property / Land Owners:										
2.1	Dr	Johnny	MacKay	Kai !Garib Municipality (Municipal Manager)	Private Bag X6	Kakamas	8870	(054) 461 6700	(054) 461 6401	mackayj@kaigarib.gov.za mm@kaigarib.gov.za
3. Occupiers										
3.1		**Mailrops done**								
4. Municipality										
4.1	Dr	Johnny	MacKay	Kai !Garib Municipality (Municipal Manager)	Private Bag X6	Kakamas	8870	(054) 461 6700	(054) 461 6401	mackayj@kaigarib.gov.za mm@kaigarib.gov.za
4.2	Ms	Angela	Filander	Kai !Garib Municipality	Private Bag X6	Kakamas	8870	(054) 461 6700	(054) 461 6401	filandera@kaigarib.gov.za angelafilander27@gmail.com
4.3	Mr	Tinus	Galloway	ZF Mgcawu District Municipality	Private Bag X6039	Upington	8800	(054) 337 2800	(053) 337 2888	Tgalloway@zfm-dm.gov.za
4.4	Mr	Gilbert	Lategan	ZF Mgcawu District Municipality	Private Bag X6039	Upington	8800	(054) 337 2800	(053) 337 2888	admin@zfm-dm.gov.za
5. Municipal Ward Councillor:										
5.1	Mr	Marius	Louw	Kai !Garib Municipality (Mayor)	Private Bag X6	Kakamas	8870	(054) 461 6700 079 867 0617	(054) 461 6401	mayor@kaigarib.gov.za mariuslouw111@gmail.com
6. Ratepayers's association										
6.1										
7.State Organisations:										
7.1	Mr	Wonders	Mothibi (HOD)	NC Department of Agriculture & Land Reform	Private Bag X5018	Kimberley	8300	(053)838 9102	(053) 831 3635	
7.2	Ms	Jacoline	Mans	Dept Agriculture, Forestry, Fisheries	P.O.Box 2782	Upington	8800	054 338 5909	054 334 0030	JacolineMa@daff.gov.za
7.3	Mr	Abe	Abrahams	Department of Water & Sanitation- Northern Cape	28 Central Road Beaconsfield	Kimberley	8301	053 830 8800 082 883 6741	(053) 831 4534	AbrahamsA@dws.gov.za
7.4	Mr	Steven	Shibambu	Northern Cape Department of Water and Sanitation	Private Bag X5912	Upington	8800	054 338 5819	086 699 2007	shibambus@dws.gov.za

7.5	Ms	Alexia	Hlengani	Northern Cape Department of Water and Sanitation	Private Bag X5912	Upington	8800	055 338 5819	087 699 2007	HlenganiA@dws.gov.za
7.6	Ms	Chantel	Schwartz	Department of Water & Sanitation- Northern Cape	Louisevale Road	Upington	8800	054 338 5836	054 334 0205	SchwartzC@dws.gov.za
7.7	Ms	T.	Tsimakwane	NC Department of Environment and Nature Conservation	Private Bag x 6102	Kimberley	8300	053 807 7300	053 807 7328	Ttsimakwane@ncpg.gov.za
7.8	Mr	Olebile	Seshupo	Northern Cape Department of Environment and Nature Conservation - De Aar	47 Church Street	De Aar	7000	053 631 0601 0768332502	0538313530	olebileseshupo@gmail.com
7.9	Ms	I.	Lekalake	Northern Cape Department: Co-operative Governance, Human Settlements and Traditional Affairs	Private Bag X5005	Kimberley	8300	053 830 9400	053 831 2904	llekalake@ncpg.gov.za IKhunou@ncpg.gov.za
7.10	Ms	Sylvia	Moholo	Department of Roads and Public Works	Private Bag X5002	Kimberley	8300	053 838 5202	053 832 7380	sylvia.moholo@dpw.gov.za
7.11	Ms	Natasha	Higgitt	South African Heritage Resource Agency (SAHRA)	P.O.Box 4637	Cape Town	8000	021 462 4502	021 462 4509	nhiggitt@sahra.org.za
7.12	Mr	M.E	Mabitsi	Eskom	18 Anton Lebowski	Upington	8800			MabitsME@Eskom.co.za
8. Neighbours/Surrounding Property Owners										
		Maildrops done								
9. Other										
9.1	Ms	Marina	Jordaan	Kakamas Water Users Association	Private Bag X4	Kakamas	8870	054 431 0725	054 431 0348	marinakwgv@isat.co.za

Photo 1: A view of the informal dwellings on site. The site comprises of informal dwellings with access roads.

Photo 2: A view of the informal dwellings on site. The site comprises of informal dwellings with access roads.

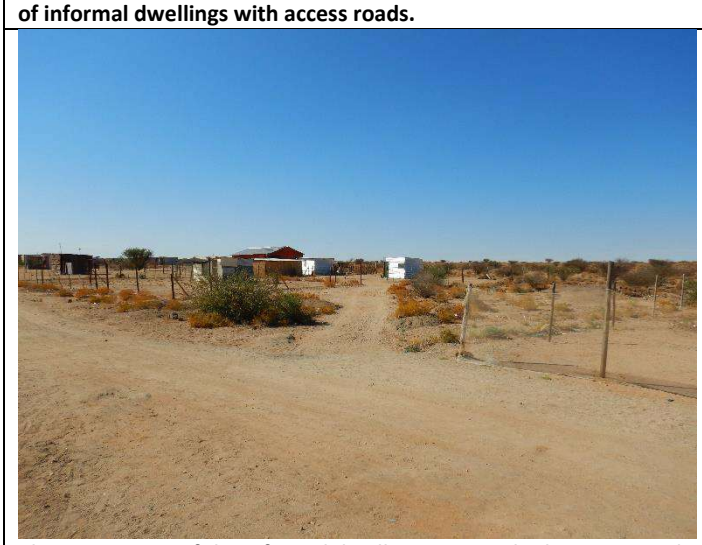

Photo 3: A view of the informal dwellings on site; looking in a south-eastern direction. The site is transformed.

Photo 4: A view of the informal dwellings on site; looking in a southern direction. The site is transformed.

Photo 5: A view of the informal dwellings on site. The site is transformed.

Photo 6: A view of the informal dwellings on site. The site is transformed.

Photo 7: A view of the informal dwellings on site. The site is transformed.

Photo 8: A view of the informal dwellings on site, looking in a south-eastern direction. The site is transformed.

Photo 9: A view of the informal dwellings on site, looking in a south-eastern direction. The site is transformed.

Photo 10: A view of the informal dwellings on site. The site is transformed.

Photo 11: A view of the informal dwellings on site, looking in a south-eastern direction. The site is transformed.

Photo 12: A view of the informal dwellings on site, looking in a south-western direction. The site is transformed.

Photo 13: A view of the informal dwellings on sit, looking in a southern direction. The site is transformed.

Photo 14: A view of the informal dwellings on site, looking in a southern direction. The site is transformed.

Photo 15: A view of the informal dwellings on site, looking in a southern direction.

Photo 16: A view of the informal dwellings on site. An A2 Poster was placed against the fence of a property on site.

Photo 17: A view of the informal dwellings on site. The site has access roads. Water is obtained through a JoJo tank on site.

Photo 18: A view of the informal dwellings on site. The site has dirt access roads.

Photo 19: A view of the informal dwellings on site. The site is transformed.

Photo 20: A view of the informal dwellings on site, looking in a north-eastern direction. The site is transformed and degraded.

Photo 21: A view of the site as viewed from the access road at M.J. Minimark; looking in a western direction.

Photo 22: A view of the site as viewed from the access road at M.J. Minimark; looking in a north-western direction.

Photo 23: A view of the site as viewed from the access road, looking in a north-western direction.

Photo 24: A view of the site as viewed from the access road, looking in a north-western direction.

REGISTER OF INTERESTED AND AFFTECTED PARTIES (I&APs)

EnviroAfrican Ref: 0489

EnviroAfrica

Environmental Planning and Impact Assessment Consultants

Omgewingsbeplanning en Impakbeoordeling Konsultante

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6.1										
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7.2	Ms	Jacoline	Mans	Dept Agriculture, Forestry, Fisheries	P.O.Box 2782	Upington	8800	054 338 5909	054 334 0030	JacolineMa@daff.gov.za
7.3	Mr	Abe	Abrahams	Department of Water & Sanitation- Northern Cape	28 Central Road Beaconsfield	Kimberley	8301	053 830 8800 082 883 6741	(053) 831 4534	AbrahamsA@dws.gov.za
7.4	Mr	Steven	Shibambu	Northern Cape Department of Water and Sanitation	Private Bag X5912	Upington	8800	054 338 5819	086 699 2007	shibambus@dws.gov.za

7.5	Ms	Alexia	Hlengani	Northern Cape Department of Water and Sanitation	Private Bag X5912	Upington	8800	055 338 5819	087 699 2007	HlenganiA@dws.gov.za
7.6	Ms	Chantel	Schwartz	Department of Water & Sanitation- Northern Cape	Louisevale Road	Upington	8800	054 338 5836	054 334 0205	SchwartzC@dws.gov.za
7.7	Ms	T.	Tsimakwane	NC Department of Environment and Nature Conservation	Private Bag x 6102	Kimberley	8300	053 807 7300	053 807 7328	Ttsimakwane@ncpg.gov.za
7.8	Mr	Olebile	Seshupo	Northern Cape Department of Environment and Nature Conservation - De Aar	47 Church Street	De Aar	7000	053 631 0601 0768332502	0538313530	olebileseshupo@gmail.com
7.9	Ms	I.	Lekalake	Northern Cape Department: Co-operative Governance, Human Settlements and Traditional Affairs	Private Bag X5005	Kimberley	8300	053 830 9400	053 831 2904	llekalake@ncpg.gov.za IKhunou@ncpg.gov.za
7.10	Ms	Sylvia	Moholo	Department of Roads and Public Works	Private Bag X5002	Kimberley	8300	053 838 5202	053 832 7380	sylvia.moholo@dpw.gov.za
7.11	Ms	Natasha	Higgitt	South African Heritage Resource Agency (SAHRA)	P.O.Box 4637	Cape Town	8000	021 462 4502	021 462 4509	nhiggitt@sahra.org.za
7.12	Mr	M.E	Mabitsi	Eskom	18 Anton Lebowski	Upington	8800			MabitsME@Eskom.co.za
8. Neighbours/Surrounding Property Owners										
		Maildrops done								
9. Other										
9.1	Ms	Marina	Jordaan	Kakamas Water Users Association	Private Bag X4	Kakamas	8870	054 431 0725	054 431 0348	marinakwgv@isat.co.za