FINAL BASIC ASSESSMENT

The proposed construction of a new cemetery Lutzburg, Northern Cape Province

Applicant: Kai !Garib Municipality
MDA Ref No: 40900
Date: March 2022

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Date Received:	

Basic Assessment Report in terms of the Environmental Impact Assessment Regulations, 2014, promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Kindly note that:

1. This **basic assessment report** is a standard report that may be required by a competent authority in terms of the EIA Regulations, 2014 and is meant to streamline applications. Please make sure that it is the report used by the particular competent authority for the activity that is being applied for.
2. This report format is current as of07 April 2017. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
3. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
4. Where applicable **tick** the boxes that are applicable in the report.
5. An incomplete report may be returned to the applicant for revision.
6. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the rejection of the application as provided for in the regulations.
7. This report must be handed in at offices of the relevant competent authority as determined by each authority.
8. No faxed or e-mailed reports will be accepted.
9. The signature of the EAP on the report must be an original signature.
10. The report must be compiled by an independent environmental assessment practitioner.
11. Unless protected by law, all information in the report will become public information on receipt by the competent authority. Any interested and affected party should be provided with the information contained in this report on request, during any stage of the application process.
12. A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
13. Should a specialist report or report on a specialised process be submitted at any stage for any part of this application, the terms of reference for such report must also be submitted.

SECTION A: ACTIVITY INFORMATION

Has a specialist been consulted to assist with the completion of this section?	YES	

If YES, please complete the form entitled "Details of specialist and declaration of interest" for the specialist appointed and attach in Appendix I.

1. ACTIVITY DESCRIPTION

a) Describe the project associated with the listed activities applied for

It was determined that the existing graveyard in the nearby area is almost full and that additional burial sites are required.

The proposed project entails the construction of a new cemetery at Lutzburg.

Please refer to Annexure A for more information on the locality / position of the proposed new cemetery.
An access road will also be constructed towards the proposed new cemetery.

Associated activities to be undertaken on site includes but is not limited to the following:

- Construction of access road.
- The site will be cleared of vegetation and laid out so as to provide burial sites for the local community.
- Alien vegetation (except large trees that exists on site) should be removed from the site.
- Water supply to the site.
- Sanitation will be provided by means of a conservancy tank.
- An ablution facility that makes provision for disabled people and a storeroom is to be constructed.
- A fence on the perimeter of the site is to be constructed.
- Graves will be pre-excavated mechanically by use of excavators (TLB's) and backfilled for future excavation by hand.
- Graves will be dug according to bookings received from undertakers. In other words provision will be made only for graves that are going to be used in a weeks' time and graves are not dug in advance for future use.
- Sufficient site drainage should be established.

It is estimated that an average of 5 burials will take place per week.

Construction of roads within the cemetery area comprise of 5m wide gravel roads and 2m gravel walkways.

b) Provide a detailed description of the listed activities associated with the project as applied for

Listed activity as described in GN 327, 325 and 324	Description of project activity
Example: ***GN 327 Item xx xx): The construction of a bridge where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.***	***A bridge measuring 5 m in height and 10m in length, no wider than 8 meters will be built over the Orange river***
Regulation 327 of 2017, Listing Notice 1 (BAR)	
Activity 12: The development of (ii) infrastructure or structures with a physical footprint of 100 square metres or more where such development occurs (a) within a watercourse (c) if no development setback exits, within 32 m of a watercourse, measured from the edge of a watercourse Excluding (dd) where such development occurs within an urban area	Construction activities within 32 m of the water courses may possibly be undertaken.
Activity 19: The infilling or depositing of any material of more than 10 m^3 into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 m^3 from a watercourse	Construction activities within 32 m of the water courses may possibly be undertaken.
Activity 23: The development of cemeteries of 2500 square meters or more in size	It is suggested that a new cemetery is constructed.
Activity 27: The clearance of an area of 1 ha or more, but less than 20 ha of indigenous vegetation, except where such clearance of indigenous vegetation is required for (i) undertaking of a linear activity or	Vegetation will be removed as part of the construction of a cemetery.

maintenance purposes undertaken in accordance with a maintenance management plan	

2. FEASIBLE AND REASONABLE ALTERNATIVES

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to—

(a) the property on which or location where it is proposed to undertake the activity;
(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Describe alternatives that are considered in this application as required by Appendix 1 (3)(h), Regulation 2014.Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity (NOT PROJECT) could be accomplished in the specific instance taking account of the interest of the applicant in the activity. The no-go alternative must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed.

The determination of whether site or activity (including different processes, etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment. After receipt of this report the, competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees, minutes and seconds. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

NOTE:

Alternative 1 **Preferred –Construction of a new cemetery**

It is proposed that a new cemetery is to be constructed on the Remainder of the Kakamas North Settlement Agricultural Holding 261, Lutzburg.

Alternative 2 **Locality**

The existing cemetery is situated on Erf 262, Lutzburg and almost reached its full capacity (and the borders of the said erf). It is therefore not feasible to expand the existing cemetery. Hence, this option is not seen as a feasible and / or reasonable alternative.

Alternative 3 **Design & Layout**

The geographic information as well as the existing road network in close proximity of the proposed site was taken into consideration. No alternative layout / design was considered as a feasible / reasonable alternative.

Alternative 4Technology
As part of this option, the construction of graves is only to be done by hand during the operational phase. However, this option is not recommended due to the:
- Type of soil (hard) encountered on site - the community members will not be able to dig the graves to the acceptable depths.
- Number of burials per week.

This option will thus not be discussed throughout the current document.

No-go Option
The no-go option includes the utilizing of the existing cemetery. The existing cemetery in the region already reached its capacity and is therefore inadequate for the need of the community. This option is thus not seen as a feasible / reasonable alternative.

a) Site alternatives

Alternative 1Preferred		
Description	Lat (DDMMSS)	Long (DDMMSS)
Proposed construction of a new cemetery on the Remainder of the Kakamas North Settlement Agricultural Holding 261	28°44'41.94"S 28°44'40.29"S 28°44'41.13"S 28°44'44.05"S 28°44'43.48"S	20°38'4.35"E 20°38'9.05"E 20°38'10.49"E 20°38'9.29"E 20°38'4.04"E
Alternative 2Locality		
Description	Lat (DDMMSS)	Long (DDMMSS)
The existing cemetery is situated on Erf 262, Lutzburg and almost reached its full capacity (and the borders of the said erf). It is therefore not feasible to expand the existing cemetery. Hence, this option is not seen as a feasible and / or reasonable alternative.		

b) Lay-out alternatives

Alternative 1Preferred		
Description	Lat (DDMMSS)	Long (DDMMSS)
The geographic information as well as the existing road network in close proximity of the proposed site was taken into consideration.	28°44'41.94"S 28°44'40.29"S 28°44'41.13"S 28°44'44.05"S 28°44'43.48"S	20°38'4.35"E 20°38'9.05"E 20°38'10.49"E 20°38'9.29"E 20°38'4.04"E
Alternative 3Design & Layout		
No alternative layout / design was considered as a feasible / reasonable alternative.		

c) Technology alternatives

Alternative 1 Preferred
• Graves will be pre-excavated mechanically by use of excavators (TLB's) and backfilled for future excavation by hand • All graves will be excavated and backfilled during the development/construction stage for future use to ensure the cost-effectiveness of the development of the cemetery. • It is estimated that an average of 5 burials will take place per week.
Alternative 4 Technology
• As part of this option, the construction of graves is only to be done by hand during the operational phase. • However, this option is not recommended due to the: - Type of soil (hard) encountered on site - the community members will not be able to dig the graves to the acceptable depths. - High number of burials per week. • This option will thus not be discussed throughout the current document.

e) No-go alternative

Utilizing the existing cemetery. The existing cemetery in the region has reached its capacity and is therefore inadequate for the need of the community. This option is thus not seen as a feasible / reasonable alternative.

Paragraphs 3 – 13 below should be completed for each alternative.

3. PHYSICAL SIZE OF THE ACTIVITY

a) Indicate the physical size of the preferred activity/technology as well as alternative activities/technologies (footprints):

Alternative:	**Size of the activity:**
Alternative 1 Preferred – New Cemetery	10 000 m²

b) Indicate the size of the alternative sites or servitudes (within which the above footprints will occur):

Alternative:	**Size of the site/servitude:**
Alternative 1 Preferred – New Cemetery	113 835 m²

4. SITE ACCESS

Does ready access to the site exist?	Yes. Access to the Preferred	

site (Alternative 1 Preferred – New Cemetery) does exists.	
If NO, what is the distance over which a new access road will be built	m

Describe the type of access road planned:

An existing dirt road that provides access to the proposed cemetery will be upgraded to a road with a width of 6m. Please refer to Annexure A for more information.

Within the proposed development site:
- Dirt roads will be constructed within the cemetery site.
- Ample parking will be allowed for, with parking bays.

Include the position of the access road on the site plan and required map, as well as an indication of the road in relation to the site.

5. LOCALITY MAP

An A3 locality map must be attached to the back of this document, as Appendix A. The scale of the locality map must be relevant to the size of the development (at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map.). The map must indicate the following:

- an accurate indication of the project site position as well as the positions of the alternative sites, if any;
- indication of all the alternatives identified;
- closest town(s;)
- road access from all major roads in the area;
- road names or numbers of all major roads as well as the roads that provide access to the site(s);
- all roads within a 1km radius of the site or alternative sites; and
- a north arrow;
- a legend; and
- locality GPS co-ordinates (Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in degrees and decimal minutes. The minutes should have at least three decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection).

6. LAYOUT/ROUTE PLAN

A detailed site or route plan(s) must be prepared for each alternative site or alternative activity. It must be attached as Appendix A to this document.

The site or route plans must indicate the following:

- the property boundaries and numbers of all the properties within 50 metres of the site;
- the current land use as well as the land use zoning of the site;
- the current land use as well as the land use zoning each of the properties adjoining the site or sites;
- the exact position of each listed activity applied for (including alternatives);
- servitude(s) indicating the purpose of the servitude;
- a legend; and
- a north arrow.

7. SENSITIVITY MAP

The layout/route plan as indicated above must be overlain with a sensitivity map that indicates all the sensitive areas associated with the site, including, but not limited to:

- watercourses;
- the 1:100 year flood line (where available or where it is required by DWS);
- ridges;
- cultural and historical features;
- areas with indigenous vegetation (even if it is degraded or infested with alien species); and
- critical biodiversity areas.

The sensitivity map must also cover areas within 100m of the site and must be attached in Appendix A.

8. SITE PHOTOGRAPHS

Colour photographs from the centre of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under Appendix B to this report. It must be supplemented with additional photographs of relevant features on the site, if applicable.

9. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of at least 1:200 as Appendix C for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity.

10. ACTIVITY MOTIVATION

Motivate and explain the need and desirability of the activity (including demand for the activity):

1. Is the activity permitted in terms of the property's existing land use rights?		NO	
An application for subdivision and rezoning in terms of the Township Establishment in terms of SPLUMA as well as the municipal land use management scheme will be submitted by the applicant.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	YES		
The proposed project is a project by the Local Municipality and is required in order to improve service delivery to the area. The proposed project is in line with the Provincial Spatial Development Plans.			
(b) Urban edge / Edge of Built environment for the area	YES		
The project entails the construction of a new cemetery.			
(c) Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).	YES		
The proposed project is in line with the vision of the Municipality (IDP and SDF), as it is a project by the Municipality itself.			
(d) Approved Structure Plan of the Municipality	YES		
The proposed project is in line with the vision of the Municipality (IDP and SDF), as it is a project by the Municipality itself.			

(e) An Environmental Management Framework (EMF) adopted by the Department (e.g. Would the approval of this application compromise the integrity of the existing environmental management priorities for the area and if so, can it be justified in terms of sustainability considerations?)	YES		
The proposed project will not compromise the integrity of the existing environmental management priorities for the area, should the contractors adhere to the conditions stipulated in this report, additional specifications to be provided in the EMPr as well as best practices. Specific measures to be implemented will include, but not limited to: - Stormwater measures - Erosion control - Limiting the removal of vegetation - Limiting the formation of dust - Monitoring groundwater and surface water for possible contamination thereof due to operational activities at the cemetery - Etc. Refer to the EMPr for more information on measures to be implemented. Note that the project is a Municipal initiative and therefore the proposed project will be in line with the integrity of the existing environmental management priorities for the area.			
(f) Any other Plans (e.g. Guide Plan)			Please explain
N/A			
3. Is the land use (associated with the activity being applied for) considered within the timeframe intended by the existing approved SDF agreed to by the relevant environmental authority (i.e. is the proposed development in line with the projects and programmes identified as priorities within the credible IDP)?		NO	
An application for subdivision and rezoning in terms of the Township Establishment in terms of SPLUMA as well as the municipal land use management scheme will be submitted by the applicant.			

4. Does the community/area need the activity and the associated land use concerned (is it a societal priority)? (This refers to the strategic as well as local level (e.g. development is a national priority, but within a specific local context it could be inappropriate.)	YES		
The existing cemetery has almost reached its capacity and is therefore inadequate for the need of the community, especially when the population growth in the area is taken into account. Therefore, the construction of a new cemetery is required to meet the needs of the community. Proposed new cemetery will provide new burial sites in close proximity to the people it will be serving.			
5. Are the necessary services with adequate capacity currently available (at the time of application), or must additional capacity be created to cater for the development? (Confirmation by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES		
• **Electricity:** No: Electricity is not required • **Stormwater:** Yes: the existing infrastructure is adequate and minor storm water drainage facilities will be required during the construction stage • **Drinking water:** Yes: will connect to existing network • **Sewer:** Yes: the conservancy tank will be serviced by the relevant municipality (i.e., the applicant) • **Roads:** Yes: will connect to the existing road Note: The Local Municipality is the Applicant, therefore a letter by the Municipality is not deemed necessary.			
6. Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)? (Comment by the relevant Municipality in this regard must be attached to the final Basic Assessment Report as Appendix I.)	YES		
The applicant for the proposed of the cemetery is the Municipality itself. The proposed project is provided for in the infrastructure planning of the said municipality.			
7. Is this project part of a national programme to address an issue of national concern or importance?	YES		
The provision of basic services is part of a national program. The proposed project entails the construction of a new cemetery in order to deliver on the Municipality's mandate to deliver basic services to the residents.			

8. Do location factors favour this land use (associated with the activity applied for) at this place? (This relates to the contextualisation of the proposed land use on this site within its broader context.)	YES		
The proposed project entails the construction of a new cemetery in close proximity to the existing cemetery. Therefore, location factors favour the proposed land use.			
9. Is the development the best practicable environmental option for this land/site?	YES		
The proposed project entails the construction of a new cemetery in close proximity to the existing cemetery. As an alternative, a new cemetery can be constructed at another site. However, this option may be costly (financially, agriculturally as well as environmentally) as: • A new portion of land will have to be bought by the Municipality (note that the Municipality received consent from the landowner to construct a cemetery on the area under assessment). • It is possible that the new site will be used for formal agricultural purposes and therefore a loss of active agricultural land will be expected			
10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	YES		
Negative impacts: • Erosion may occur during the construction phase • Formation of dust may take place during the construction phase • Visual impact will occur during the construction and operational phase **Positive impacts:** • The proposed project is considered essential to enable the Municipality to provide basic services to residents in the area • This in turn will have a positive impact on the social, economic as well as environmental impacts of the area The negative impacts expected during the construction phase of the proposed project can be minimized through the recommended mitigation measures as stipulated in this report, the EMPr as well as best practices.			
11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	YES		
The proposed project may result in the development of further cemeteries / expansion of the proposed project in this area over the long term. This precedent is not necessarily negative or undesirable.			

12. Will any person's rights be negatively affected by the proposed activity/ies?		NO	
Community members will be positively affected during the operational phase as the proposed project will enable the Municipality with the opportunity to provide basic cemetery services to the area. The cemetery will be fenced off and therefore the proposed activities will not have a noteworthy negative effect on the community members that utilise the open veld for livestock farming activities.			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?		NO	
It is not anticipated that the proposed activity itself will have an effect on the 'urban edge'.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	YES		
The proposed project contributes to SIPS 6: Integrated Municipal Infrastructure Project.			
15. What will the benefits be to society in general and to the local communities?			Please explain
The proposed development of a cemetery will provide new burial sites for the society in general. • Employment opportunities during the construction phase. • Employment opportunities during the operational phase. • The availability of adequate burial sites for members from the local community.			
16. Any other need and desirability considerations related to the proposed activity?			NO
The proposed project will provide the much-needed burial sites during the operational phase thereof. This will have a positive impact on the socio-economics of the area.			
17. How does the project fit into the National Development Plan for 2030?			
The proposed project will provide the much-needed burial sites during the operational phase thereof. This will have a positive impact on the socio-economics of the area.			
18. **Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.**			

Section 23 of NEMA (Act 107, 27 November 1998) reads as follows:

1. The purpose of this Chapter is to promote the application of appropriate environmental management tools in order to ensure the integrated environmental management of activities.

2. The general objective of integrated environmental management is to -

a. promote the integration of the principles of environmental management set out in section 2 into the making of all decisions which may have a significant effect on the environment.

b. identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits and promoting compliance with the principles of environmental management set out in section 2;

c. ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;

d. ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;

e. ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment; and

f. identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in section 2.

3. The Director-General must coordinate the activities of organs of state referred to in section 24(1) and assist them in giving effect to the objectives of this section and such assistance may include training, the publication of manuals and guidelines and the co-ordination of procedures.'

With the above in mind, the following objectives were taken into consideration:

1. An application for environmental authorisation was submitted to the relevant environmental department.

2. Integration of various principles of environmental management were implemented in order to make decisions regarding the significant effect of the proposed project on the environment

3. Identified, predicted, and evaluated the actual potential impact of the proposed project on the environment, the socio-economic conditions and heritage, as well as the consequences and alternatives and options for mitigation of activities. This was done to minimize the possible negative impacts on the environment and maximizing benefits to mankind.

4. Taken the effects of activities on the environment into consideration before actions are to be taken in connection with them.

5. A public participation process was followed.

6. Considered the environmental attributes in management and decision-making with reference to the environment.

7. Mitigation and management activities best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management were investigated.

8. The report follows the laws to identify, predict and evaluate the actual and potential impacts associated with the development.

9. Specialists investigated the site to determine baseline and to predict the impacts associated with the proposed project. The preferred alternative has been identified as the one that will have the least negative impact on the environment, as sensitive areas will be avoided as far as possible. In addition, already disturbed areas will be utilized as far as possible.

10. A public participation process was followed. Consideration of the 2014 EIA Regulations has been applied in this regard.

11. An EMPr is included, with mitigation measures that should be implemented during the planning, construction, operation, and possible decommissioning of the proposed project. These mitigation measures are in line with the environmental requirements and Best Practise Principles.

12. Relevant guidelines and procedures were used to produce this document. Therefore, relevant information is reflected, for sufficient co-governance to be implemented.

13. The proposed project provides for the needs of the applicant while ensure compliance with environmental management principles.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.

Section 2 of NEMA (Act 107, 27 November 1998) reads as follows:

1. The principles set out in this section apply throughout the Republic to the actions of all organs of state that may significantly affect the environment and—

a. shall apply alongside all other appropriate and relevant considerations, including the State's responsibility to respect, protect, promote and fulfil the social and economic rights in Chapter 2 of the Constitution and in particular the basic needs of categories of persons disadvantaged by unfair discrimination.
b. serve as the general framework within which environmental management and implementation plans must be formulated:
c. serve as guidelines by reference to which any organ of state must exercise any function when taking any decision in terms of this Act or any statutory provision concerning the protection of the environment.
d. serve as principles by reference to which a conciliator appointed under this Act must make recommendations; and
e. guide the interpretation, administration and implementation of this Act, and any other law concerned with the protection or management of the environment.

2. Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

3. Development must be socially, environmentally and economically sustainable.

4. a. Sustainable development requires the consideration of all relevant factors including the following:

(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied.

(ii) into account the limits of current knowledge about the consequences of decisions and actions; and

(iii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.

(iv) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied.

(v) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied.

(vi) that waste is avoided. or where it cannot be altogether avoided, minimised, and re-used or recycled where possible and otherwise disposed of in a responsible manner.

(vii) that the use and exploitation of non-renewable natural resources is responsible and equitable and takes into account the consequences of the depletion of the resource.

(viii) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised.

(ix) that a risk-averse and cautious approach is applied.

b. Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.

c. Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.

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

e. Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.

f. The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.

g. Decisions must take into account the interest, needs and values of all the interested and affected parties, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge.

h. Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.

i. The social, economic and environmental impacts of activities, including disadvantages and benefits must be considered, assessed and evaluated and decisions must be appropriate in the light of such consideration and assessment.

j. The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.

k. Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.

l. There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.

m. Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.

n. Global and international responsibilities relating to the environment must be discharged in the national interest.

o. The environment is held in public trust for the people. The beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.

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

q. The vital role of women and youth in environment management and development must be recognised and their full participation therein must be promoted.

r. Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

The applicant of the proposed project took the following into consideration:

1. That the disturbance of ecosystems and loss of biological diversity are minimized and remedied by implementing the mitigation measures in this document, the EMPr as well as best practices.
2. Environmental management must be integrated
3. Adverse environmental impacts (if any) shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.
4. The participation of all interested and affected parties in environmental governance must be promoted by means of the public participation process that forms part of the basic assessment process.
5. Community wellbeing and empowerment must be promoted by providing employment opportunities during the construction as well as operational phase.
6. The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers will be respected and protected.

11. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations, if applicable:

Title of legislation, policy or guideline	Applicability to the project	Administering authority	Date
National Environmental Management Act, 1998 (Act 107 of 1998)	Proposed construction of a cemetery	NC DENC	1998
National Heritage Resources Act (Act No 25 of 1999)	Proposed construction of a cemetery	SAHRA	1999
National Environmental Management Biodiversity Act, 2004 (Act 10 of 2004)	Proposed construction of a cemetery	NC DENC	2004
Environmental Conservation Act (Act 73 of 1989)	Conservation of the environment, by implementing best practices	DEA / NC DENC	1989
National Environmental Management Biodiversity Act, 2004 (Act 10 0f 2004)	Endangered / Vulnerable vegetation types and Protected Species (TOPS)	DEA / NC DENC	2004
Northern Cape Nature Conservation Act (Act 9 of 2009) (NCNCA)	Conservation of the environment, by implementing best practices	DEA / NC DENC	2009
National Forests Act (Act No. 84 of 1998) (NFA)	Conservation of protected trees (if any)	DAFF	1998
National Veld and Forest Fires Act, Act 101 of 1998 (NVFFA)	Mitigation measures to be implemented in case of a fire	DAFF	1998
NEM Laws Amendment Act Department (Act 25 of 2014)	Amended regulations for the Public Participation Process.	DEA / NC DENC	2014
Conservation of Agricultural Resources Act (Act 43 of 1983)	The re-zoning of agricultural land for the use of cemeteries	DAFF	1983
National Water Act, 1998 (Act 36 of 1998)	Activities in proximity to 32m from watercourses.	DWS	1998

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	NO
If YES, what estimated quantity will be produced per month?	m^3

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

The contractor will be responsible for the disposal of waste generated during the construction phase. The contractor will remove the construction waste and dispose thereof at a suitable authorized landfill site.

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

Solid waste disposal sites in Kakamas. Hazardous waste (if any) should be disposed of at a suitable authorized hazardous landfill site such as Holfontein.

Will the activity produce solid waste during its operational phase?	NO
If YES, what estimated quantity will be produced per month?	m^3

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

N/A

If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.

N/A

Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?

N/A

If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	NO

If YES, inform the competent authority and request a change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

Is the activity that is being applied for a solid waste handling or treatment facility?	NO

If YES, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA. An application for a waste permit in terms of the NEM:WA must also be submitted with this application.

b) Liquid effluent

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	NO
If YES, what estimated quantity will be produced per month?	m^3
Will the activity produce any effluent that will be treated and/or disposed of on site?	NO

If YES, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Will the activity produce effluent that will be treated and/or disposed of at another facility?		NO

If YES, provide the particulars of the facility:

Facility name:			
Contact person:			
Postal address:			
Postal code:			
Telephone:		**Cell:**	
E-mail:		**Fax:**	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

c) Emissions into the atmosphere

Will the activity release emissions into the atmosphere other that exhaust emissions and dust associated with construction phase activities?		NO
If YES, is it controlled by any legislation of any sphere of government?		NO

If YES, the applicant must consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

If NO, describe the emissions in terms of type and concentration:

- The emissions associated with the proposed activity can be described as general vehicle emissions and dust formation.
- Construction activities will be limited to daytime hours, where possible.
- In addition, dust can also be seen as a potential issue during construction due to blasting activities.
- This will be temporary, and the formation of dust will be controlled, when necessary.
- A blasting permit will be obtained before blasting activities is undertaken.
- Adjacent landowners will be notified of proposed blasting 24 hours prior to blasting activities.
- Generation of dust may also occur during general maintenance work, during the operational phase.

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?		NO

If YES, please submit evidence that an application for a waste permit has been submitted to the competent authority

e) Generation of noise

Will the activity generate noise?	YES	
If YES, is it controlled by any legislation of any sphere of government?		NO

Describe the noise in terms of type and level:

- Noise associated with the development activities will be from general vehicular activities as well as construction activities including blasting, when required.
- Heavy vehicles will be equipped with silencers.
- A blasting permit will be obtained before blasting activities is undertaken.
- The adjacent landowners will be notified of proposed blasting 24 hours prior to blasting activities.
- In addition, construction activities will be limited to daytime hours, where possible.
- Additional noise may be generated during the operational phase when maintenance work is required.
- Noise levels will have to comply with the requirements as set out in the OSH Act.

13. WATER USE

Please indicate the source(s) of water that will be used for the activity by ticking the appropriate box(es):

Municipal	Water board	Groundwater	River, stream, dam or lake	Other	The activity will not use water

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate the volume that will be extracted per month:	litres	
Does the activity require a water use authorisation (general authorisation or water use license) from the Department of Water Affairs?	YES	

If YES, please provide proof that the application has been submitted to the Department of Water Affairs.

An application to DWS (if necessary), for the impeding and / or alteration of beds / banks of water course(s) will be submitted in due course.

14. ENERGY EFFICIENCY

Describe the design measures, if any, which have been taken to ensure that the activity is energy efficient:

N/A

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

N/A

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

1. For linear activities (pipelines, etc) as well as activities that cover very large sites, it may be necessary to complete this section for each part of the site that has a significantly different environment. In such cases please complete copies of Section B and indicate the area, which is covered by each copy No. on the Site Plan.

Section B Copy No. (e.g. A): [ ]

2. Paragraphs 1 - 6 below must be completed for each alternative.

3. Has a specialist been consulted to assist with the completion of this section? YES [ ]

If YES, please complete the form entitled "Details of specialist and declaration of interest" for each specialist thus appointed and attach it in Appendix I. All specialist reports must be contained in Appendix D.

Property description/physical address:

Province	Northern Cape Province	
District Municipality	ZF Mgcawu District Municipality	
Local Municipality	Kai !Garib Local Municipality	
Ward Number(s)	7	
Alternative 1 Preferred – New Cemetery	**Erf / Holding / Farm**	Remainder of the Kakamas North Settlement Agricultural Holding 261
	Portion number	Remainder
	SG Code	C02800050000026100000

Where a large number of properties are involved (e.g. linear activities), please attach a full list to this application including the same information as indicated above.

Current land-use zoning as per local municipality IDP/records:

Holding

In instances where there is more than one current land-use zoning, please attach a list of current land use zonings that also indicate which portions each use pertains to, to this application.

Is a change of land-use or a consent use application required? YES [ ]

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Preferred Alternative 1 Preferred - Construction of new cemetery:

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

2. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site:

2.1 Ridgeline		2.4 Closed valley		2.7 Undulating plain / low hills	
2.2 Plateau		2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain		2.6 Plain	x	2.9 Seafront	
2.10 At sea					

The topography of the site is relatively uniform and is dominated by an alluvial plain.

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Alternative 1 Preferred -Construction of new cemetery:
Shallow water table (less than 1.5m deep)	YES; Close to water bodies
Dolomite, sinkhole or doline areas	NO
Seasonally wet soils (often close to water bodies)	YES; Close to water bodies
Unstable rocky slopes or steep slopes with loose soil	NO
Dispersive soils (soils that dissolve in water)	NO
Soils with high clay content (clay fraction more than 40%)	NO
Any other unstable soil or geological feature	NO
An area sensitive to erosion	NO

If you are unsure about any of the above or if you are concerned that any of the above aspects may be an issue of concern in the application, an appropriate specialist should be appointed to assist in the completion of this section. Information in respect of the above will often be available as part of the project information or at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by the Council for Geo Science may also be consulted.

4. GROUNDCOVER

Indicate the types of groundcover present on the site. The location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Natural veld - good condition[E]	Natural veld with	Natural veld with heavy alien infestation[E]	Veld dominated by alien species[E]	Gardens

	scattered aliens[E]			
Sport field	Cultivated land	Paved surface	Building or other structure	Bare soil

If any of the boxes marked with an "[E] "is ticked, please consult an appropriate specialist to assist in the completion of this section if the environmental assessment practitioner doesn't have the necessary expertise.

The majority of the site still consists of natural vegetation but which has been degraded to some extent by the current land use.

5. SURFACE WATER

Indicate the surface water present on and or adjacent to the site and alternative sites?

Perennial River		NO
Non-Perennial River	YES	
Permanent Wetland		NO
Seasonal Wetland		NO
Artificial Wetland		NO
Estuarine / Lagoonal wetland		NO

If any of the boxes marked YES or UNSURE is ticked, please provide a description of the relevant watercourse.

Ecological Report:

The vegetation type on the site, Kalahari Karroid Shrubland (NKb 5), is not currently under significant threat and does not contribute significantly toward the conservation value of the site. Remnants of the threatened Lower Gariep Alluvial Vegetation (Aza 3) occur to the south and east of the site though both mapping resources and the on-site survey confirm that it is absent from the site and as long as activities are confined to the site footprint, should therefore remain unaffected.

The site is surrounded by natural areas although it is clear that the adjacent urban area causes significant disturbance of the environment. A network of dirt roads is one of the most significant impacts in the area. The site itself is devoid of any watercourses although two ephemeral drainage lines occur to the east and west of the site.

A large and significant drainage line occurs approximately 30 meters to the east of the site and should therefore remain unaffected. A much smaller drainage line borders the site to the west and should therefore be excluded from the site and should not form part of the graveyard layout. Although it is excluded from the site it will still be important to implement adequate storm water management measures in order to prevent erosion and also to manage the flow of surface runoff on the site.

Despite the apparent uniformity and low species diversity, several specimens of the protected tree species *Vachellia erioloba* and one specimen of *Boscia albitrunca* occur on the site. These trees would also be beneficial for the landscaping of the cemetery, and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them.

Although the Northern Cape Critical Biodiversity Areas Plan (2016) indicate that the site is regarded as a Critical Biodiversity Area 2 (CBA 2) due the presence of rocky outcrops, the site survey indicated that these are not present on the site but do occur immediately to the north of it. As a combination of the above, the loss of the vegetation on the site will not exceed a moderate impact. The small extent of the proposed development will also decrease the anticipated impact.

The impact significance has been determined and it is clear that the impacts before mitigation will mostly be moderate. With adequate mitigation the majority of impacts can be lowered to low-moderate although the loss of the vegetation on the site cannot be significantly mitigated and would likely remain moderate.

Geohydrological Report:

From the information that was collected during the desk study as well as the site visit, in mind, it is evident that:

- The study area is situated on a minor aquifer system which is associated with boreholes with an average yield between 0.1 and 0.5ℓ/s.
- No groundwater users were found in the immediate vicinity of the proposed site but in general groundwater is used on small scale for general domestic purposes.
- The aquifer is least vulnerable for contamination due to the fact that the project site is situated on a poor aquifer.
- No significant magnetic anomalies were detected on the proposed site.

It is therefore recommended that: the proposed site be utilised for the development of a cemetery as planned.

6. LAND USE CHARACTER OF SURROUNDING AREA

Indicate land uses and/or prominent features that currently occur within a 500m radius of the site and give description of how this influences the application or may be impacted upon by the application:

Natural area	Dam or reservoir	Polo fields
Low density residential	Hospital/medical centre	Filling station [H]
Medium density residential	School	Landfill or waste treatment site
High density residential	Tertiary education facility	Plantation
Informal residential[A]	Church	Agriculture
Retail commercial & warehousing	Old age home	River, stream or wetland
Light industrial	Sewage treatment plant[A]	Nature conservation area
Medium industrial [AN]	Train station or shunting yard [N]	Mountain, koppie or ridge
Heavy industrial [AN]	Railway line [N]	Museum
Power station	Major road (4 lanes or more) [N]	Historical building
Office/consulting room	Airport [N]	Protected Area
Military or police base/station/compound	Harbour	Graveyard
Spoil heap or slimes dam[A]	Sport facilities	Archaeological site
Quarry, sand or borrow pit	Golf course	Other land uses (describe)

If any of the boxes marked with an "[N] "are ticked, how this impact will / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "An" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

If any of the boxes marked with an "H" are ticked, how will this impact / be impacted upon by the proposed activity? Specify and explain:

N/A

NOTE: The proposed impacts upon the proposed activity due to the boxes marked with an "A":

Negative impact:
It should be noted that the proposed cemetery will be constructed within a close proximity to the existing cemetery. No additional long term negative impacts anticipated, should the mitigation measures listed in the EMPr and this document, as well as best practices be implemented. Noise and dust formation may have a negative impact during the construction phase. However, all possible mitigation measures will be implemented to limit the above-mentioned impacts may have on the residents.

In addition, the proposed cemetery will have a negative visual impact. However, it should be noted that the proposed cemetery will be constructed within a close proximity to the existing cemetery and therefore the proposed cemetery will have a similar impact on the aesthetic value as the existing cemetery. It is suggested that the mitigation measures listed in the EMPr and the current document should be implemented to limit the visual impact of the proposed new cemetery. This includes the following:
Site should be clean and tidy.
Construction activities should be limited to normal construction hours, if possible.
Dust suppression measures should be implemented, when necessary.

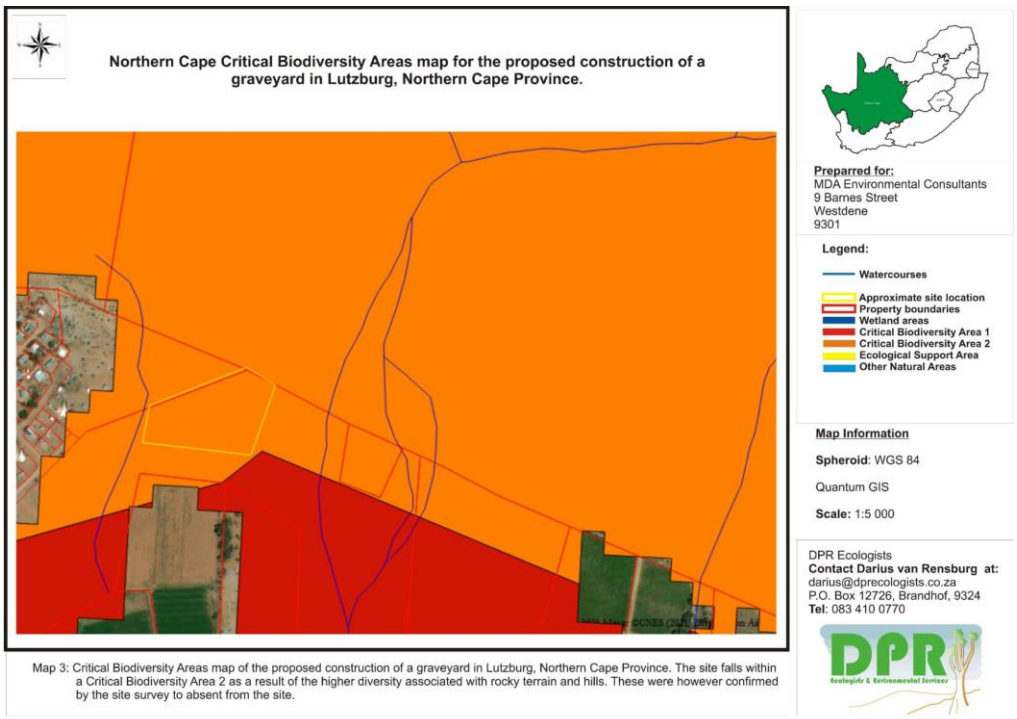
Positive impact:
Cemetery will be located within a close proximity to community members.

Does the proposed site (including any alternative sites) fall within any of the following:

Critical Biodiversity Area (as per provincial conservation plan)	YES*	
Core area of a protected area?		NO
Buffer area of a protected area?		NO
Planned expansion area of an existing protected area?		NO
Existing offset area associated with a previous Environmental Authorisation?		NO
Buffer area of the SKA?		NO

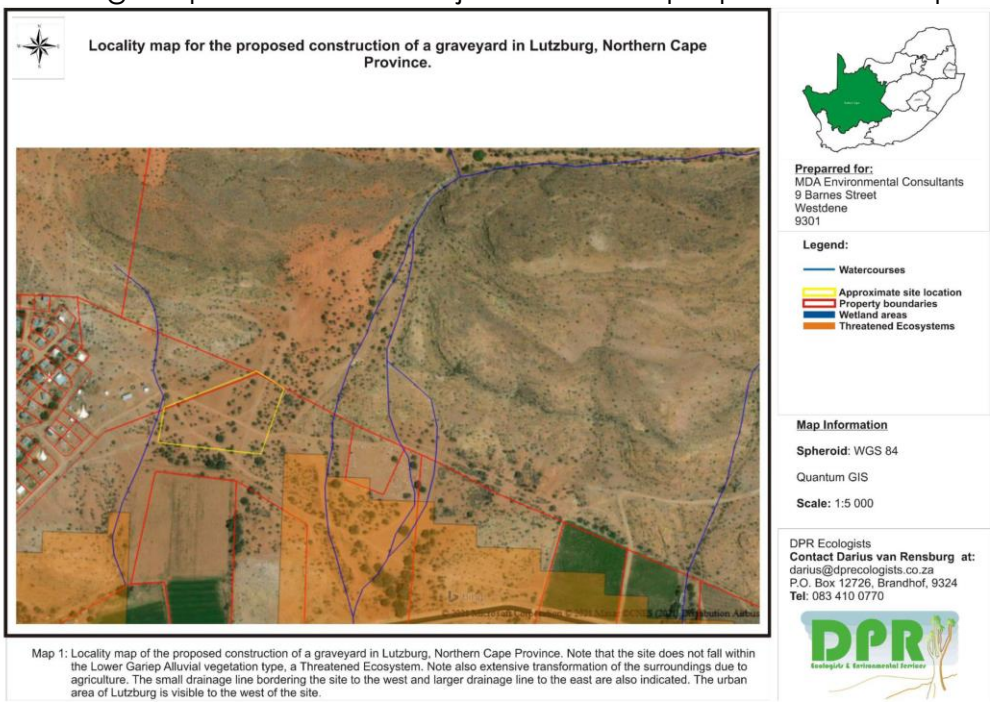
If the answer to any of these questions was YES, a map indicating the affected area must be included in Appendix A.

*The site in question is listed as being a Critical Biodiversity Area 2, as a result of the rocky, hill terrain which is well-known to contain a significantly higher species diversity than other habitats. The site survey has however indicated that it is not situated within this rocky terrain (which would also be unsuitable for the digging of graves for graveyards). Consequently, this does not significantly increase the conservation value of the site.



Map 3: Critical Biodiversity Areas map of the proposed construction of a graveyard in Lutzburg, Northern Cape Province. The site falls within a Critical Biodiversity Area 2 as a result of the higher diversity associated with rocky terrain and hills. These were however confirmed by the site survey to absent from the site.

NOTE: Please note that various non-perennial streams as indicated on the following map are located adjacent to the proposed development site:



Map 1: Locality map of the proposed construction of a graveyard in Lutzburg, Northern Cape Province. Note that the site does not fall within the Lower Gariep Alluvial vegetation type, a Threatened Ecosystem. Note also extensive transformation of the surroundings due to agriculture. The small drainage line bordering the site to the west and larger drainage line to the east are also indicated. The urban area of Lutzburg is visible to the west of the site.

7. CULTURAL/HISTORICAL FEATURES

Are there any signs of culturally or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including Archaeological or paleontological sites, on or close (within 20m) to the site? If YES, explain:		NO

If uncertain, conduct a specialist investigation by a recognised specialist in the field (archaeology or palaeontology) to establish whether there is such a feature(s) present on or close to the site. Briefly explain the findings of the specialist:

A Phase 1 Heritage Impact Assessment was carried out for the establishment of a proposed new cemetery located at the Lutzburg settlement near Kakamas. The extent of the proposed development (over 5000 m2) falls within the requirements for a Heritage Impact Assessment (HIA) as required by Section 38 (Heritage Resources Management) of the South African National Heritage Resources Act (Act No. 25 of 1999). The assessment involved identification of possible archaeological and paleontological sites or occurrences in the proposed zone, an assessment of their significance, possible impact by the proposed development and recommendations for mitigation where relevant.

The chances of palaeontological impact resulting from the proposed development are considered to be improbable because of the nature of the underlying geology. As far as the palaeontological heritage is concerned, the proposed development may proceed with no further palaeontological assessments required. If, in the unlikely event that localized fossil material is discovered within the superficial overburden during the construction phase of the project, it is recommended that a professional palaeontologist be called in to record and rescue the fossils where necessary.

The study areas are located within a region that has previously yielded ample archaeological as well as historical evidence of the early movement and settlement of Khoi herders and San hunter-gatherers along the Orange River during the last 2000 years. However, the proposed development footprint is located on fairly degraded terrain resulting from previous and ongoing human activities related to the Lutzburg settlement located 400 m to the west of the existing cemetery.

The proposed development area is not considered archaeologically vulnerable and there are no major archaeological grounds to suspend the proposed development, provided that all excavation activities are confined to within the confines of the development footprint. The proposed development footprint is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C.

Will any building or structure older than 60 years be affected in any way?	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	NO

If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.

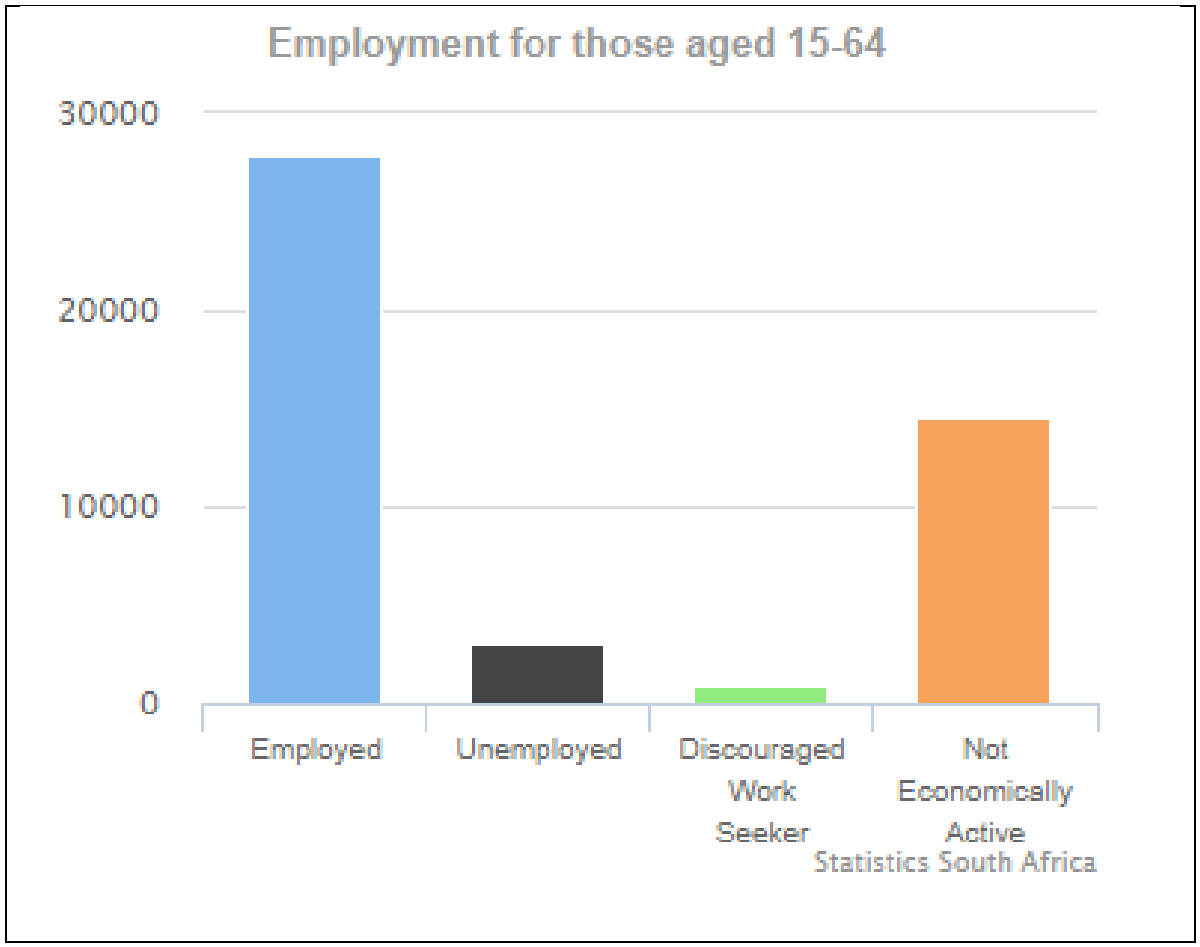
8. SOCIO-ECONOMIC CHARACTER

a) Local Municipality

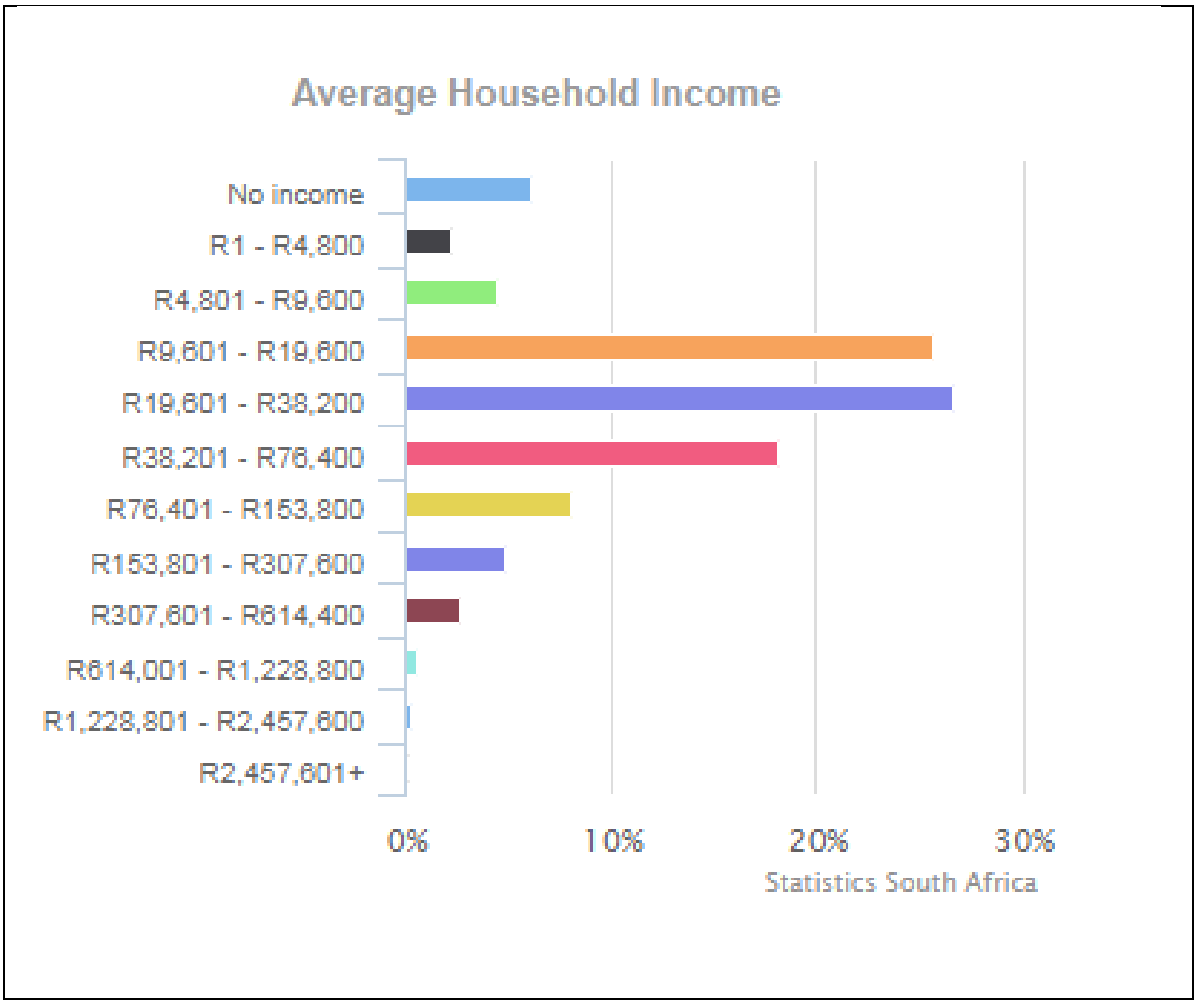
Please provide details on the socio-economic character of the local municipality in which the proposed site(s) are situated.

NOTE: The following information was obtained from:
http://www.statssa.gov.za/?page_id=993&id=kai-garib-municipality

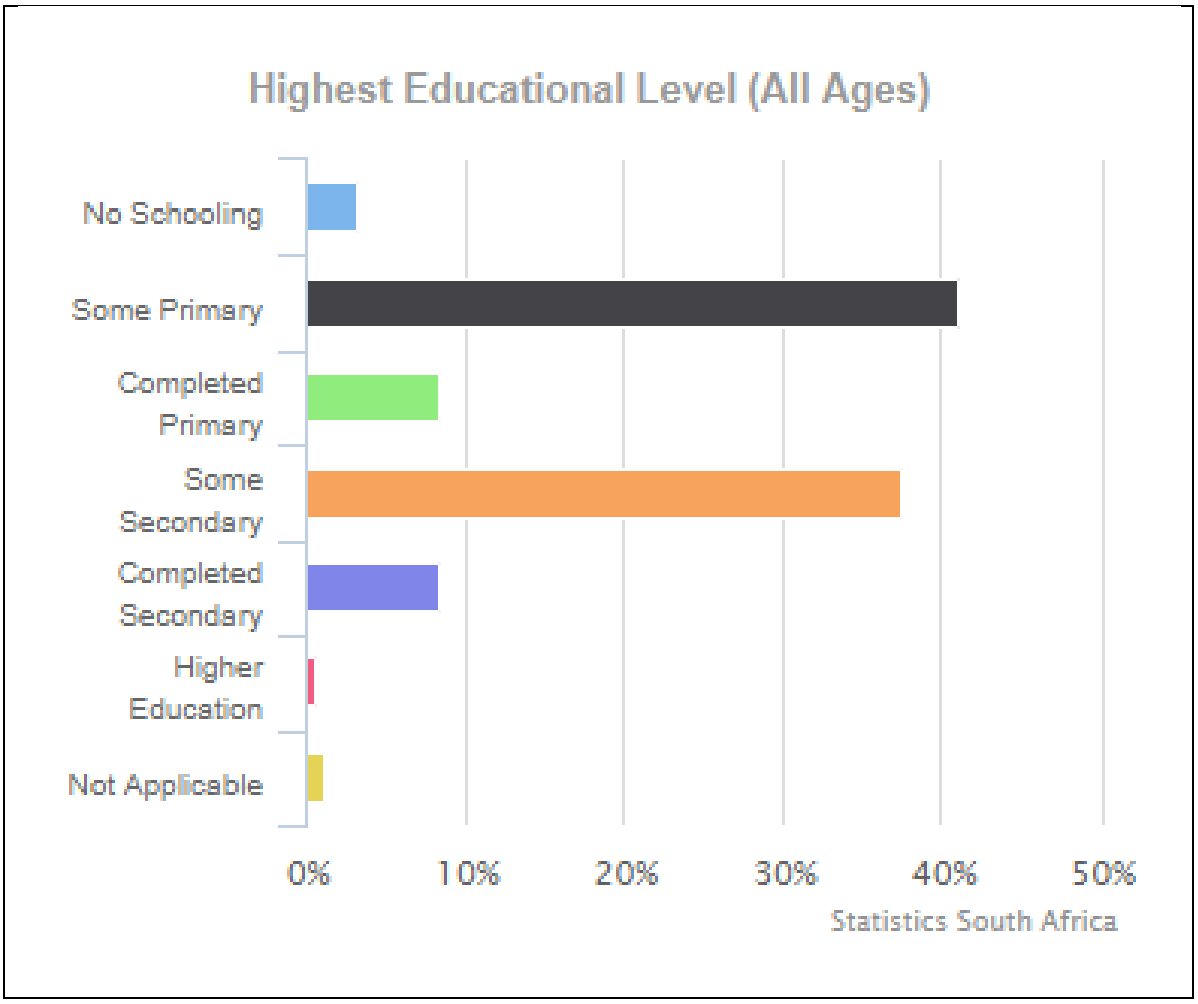
Level of unemployment:



Economic profile of local municipality:



Level of education:



b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	Unknown. The proposed project is a service delivery project.	
What is the expected yearly income that will be generated by or as a result of the activity?	N/A	
Will the activity contribute to service infrastructure?	YES	
Is the activity a public amenity?	YES	
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	Unknown, depends on contractor	
What is the expected value of the employment opportunities during the development and construction phase?	Unknown, depends on contractor	

What percentage of this will accrue to previously disadvantaged individuals?	Approximately 80%
How many permanent new employment opportunities will be created during the operational phase of the activity?	Unknown
What is the expected current value of the employment opportunities during the first 10 years?	Unknown
What percentage of this will accrue to previously disadvantaged individuals?	Approximately 80%

9. BIODIVERSITY

Please note: The Department may request specialist input/studies depending on the nature of the biodiversity occurring on the site and potential impact(s) of the proposed activity/ies. To assist with the identification of the biodiversity occurring on site and the ecosystem status consult http://bgis.sanbi.org or BGIShelp@sanbi.org. Information is also available on compact disc (cd) from the Biodiversity-GIS Unit, Ph (021) 799 8698. This information may be updated from time to time and it is the applicant/ EAP's responsibility to ensure that the latest version is used. A map of the relevant biodiversity information (including an indication of the habitat conditions as per (b) below) and must be provided as an overlay map to the property/site plan as Appendix D to this report.

a) Indicate the applicable biodiversity planning categories of all areas on site and indicate the reason(s) provided in the biodiversity plan for the selection of the specific area as part of the specific category)

Systematic Biodiversity Planning Category	If CBA or ESA, indicate the reason(s) for its selection in biodiversity plan

Critical Biodiversity Area (CBA)	Ecological Support Area (ESA)	Other Natural Area (ONA)	No Natural Area Remaining (NNR)	The vegetation on the site is still largely natural although significant disturbance was present. The site does not contain any unique habitats or significant species diversity. Furthermore, the vegetation types on the site, Lower Gariep Broken Veld (NKb 1) and Kalahari Karroid Shrubland (NKb 5), are both listed as being of Least Concern (LC) and do not significantly contribute towards its conservation value. Although the Northern Cape Critical Biodiversity Areas Plan (2016) indicate that the site is regarded as a Critical Biodiversity Area 2 (CBA 2) due the presence of rocky outcrops, the site survey indicated that these are not present on the site but do occur immediately to the north of it. As a combination of the above, the loss of the vegetation on the site will not exceed a moderate impact. The small extent of the proposed development will also decrease the anticipated impact.

b) Indicate and describe the habitat condition on site

Habitat Condition	**Percentage of habitat condition class (adding up to 100%)**	**Description and additional Comments and Observations (including additional insight into condition, e.g. poor land management practises, presence of quarries, grazing, harvesting regimes etc).**
Natural	0%	
Near Natural (includes areas with low to moderate level of alien invasive plants)	100%	The site is considered to still be largely natural though some disturbance is evident and decreases its condition.

Degraded (includes areas heavily invaded by alien plants)	0%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	0%	

c) Complete the table to indicate:

(i) the type of vegetation, including its ecosystem status, present on the site; and

(ii) whether an aquatic ecosystem is present on site.

Terrestrial Ecosystems		**Aquatic Ecosystems**						
Ecosystem threat status as per the National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Critical	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
	Endangered							
	Vulnerable							
	Least Threatened		NO					NO

d) Please provide a description of the vegetation type and/or aquatic ecosystem present on site, including any important biodiversity features/information identified on site (e.g. threatened species and special habitats)

Ecological Report:

The vegetation type on the site, Kalahari Karroid Shrubland (NKb 5), is not currently under significant threat and does not contribute significantly toward the conservation value of the site. Remnants of the threatened Lower Gariep Alluvial Vegetation (Aza 3) occur to the south and east of the site though both mapping resources and the on-site survey confirm that it is absent from the site and as long as activities are confined to the site footprint, should therefore remain unaffected.

The site is surrounded by natural areas although it is clear that the adjacent urban area causes significant disturbance of the environment. A network of dirt roads is one of the most significant impacts in the area. The site itself is devoid of any watercourses although two ephemeral drainage lines occur to the east and west of the site.

A large and significant drainage line occurs approximately 30 meters to the east of the site and should therefore remain unaffected. A much smaller drainage line borders the site to the west and should therefore be excluded from the site and should not form part of the graveyard layout. Although it is excluded from the site it will still be important to implement adequate storm water management measures in order to prevent erosion and also to manage the flow of surface runoff on the site.

Despite the apparent uniformity and low species diversity, several specimens of the protected tree species *Vachellia erioloba* and one specimen of *Boscia albitrunca* occur on the site. These trees would also be beneficial for the landscaping of the cemetery and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them.

Although the Northern Cape Critical Biodiversity Areas Plan (2016) indicate that the site is regarded as a Critical Biodiversity Area 2 (CBA 2) due the presence of rocky outcrops, the site survey indicated that these are not present on the site but do occur immediately to the north of it. As a combination of the above, the loss of the vegetation on the site will not exceed a moderate impact. The small extent of the proposed development will also decrease the anticipated impact.

The impact significance has been determined and it is clear that the impacts before mitigation will mostly be moderate. With adequate mitigation the majority of impacts can be lowered to low-moderate although the loss of the vegetation on the site cannot be significantly mitigated and would likely remain moderate.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	NoordKaap Bulletin	
Date published	7 October 2021	
Site notice position	**Latitude**	**Longitude**
	28°44'41.99"S	20°38'4.40"E
Date placed	28 October 2021	

Include proof of the placement of the relevant advertisements and notices in Appendix E1.

2. DETERMINATION OF APPROPRIATE MEASURES

Provide details of the measures taken to include all potential I&APs as required by Regulation 41(2)(e) and 41(6) of GN 733.

NOTE:

Identification of possible IAPs includes:

- District Municipality: Manager
- Local Municipality: Manager
- Ward Councillor: Ward 7
- Dept. of Agriculture, Forestry and Fisheries
- Dept. of Water and Sanitation
- SAHRA
- Northern Cape Heritage
- Adjacent landowners

Site notices were placed on site.

Adjacent landowners were notified via mail drop / registered post.
Authorities were notified via registered post.

A legal notice was placed in the NoordKaap Bulletin on the 7th of October 2021.

Copies of the dBAR were provided to all the registered parties.

All registered parties were given the opportunity to comment on the BAR documents.

Key stakeholders (other than organs of state) identified in terms of Regulation 41(2)(b) of GN 733

Title, Name and Surname	Affiliation / Key stakeholder status	Contact details (tel number or e-mail address)
Department of Agriculture, Land Reform and Rural Development		Mr G.N. Esterhuysen Telephone: 054 337 8000 Facsimile: 054 337 8001 P.O. Box 52 Upington 8800
Department of Agriculture, Forestry & Fisheries		Ms Jacoline Mans P.O. Box 2782 Upington 8800 jacolinema@daff.gov.za 054 334 0030
ESKOM		Ms Andrea van Gensen Environmental Manager Land Development & Environment Northern Cape Operating Unit Eskom Holdings SOS Limited DSC Office Block 69 Memorial Road PO Box 606 Kimberley 8301
TELKOM		Ms H. Van den Heever Telkom Wayleave Operations Manager Facsimile: 051 401 6238 Tel: 051 401 6829 Private Bag X20700 Bloemfontein 9300 wayleacr@telkom.co.za
Department of Roads and Public Works: Northern Cape Province		PO Box 3132 Kimberley 8300 9-11 Stokroos Street Square Hill Park Kimberley 8301 053 839 2100 Mr I. Bulane

Title, Name and Surname	Affiliation / Key stakeholder status	Contact details (tel number or e-mail address)
		Department of Roads and Public Works 072 086 6241 P.O. Box 3132 Kimberley 8300 leecha1@vodamail.co.za
SAHRA		P.O. Box 4637 CAPE TOWN 8000
Northern Cape Heritage		1 Monridge Parl Cnr. Kekewich Drive & Memorial Road Kimberley 8300

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E2. This proof may include any of the following:

- e-mail delivery reports;
- registered mail receipts;
- courier waybills;
- signed acknowledgements of receipt; and/or
- or any other proof as agreed upon by the competent authority.

3. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
SAHRA	
The following comments are made as a requirement in terms of section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA and must be included in the Final BAR and EMPr: • 38(4)a – The SAHRA Archaeology, Palaeontology and Meteorites	The information provided is included in the EMPr.

Summary of main issues raised by I&APs	Summary of response from EAP
(APM) Unit has no objections to the proposed development; • 38(4)b – The recommendations of the specialists are supported and must be adhered to. No further additional specific conditions are provided for the development; • 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqalabutho Madida 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)d – See section 51 of the NHRA regarding offences; • 38(4)e – The following conditions apply with regards to the appointment of specialists: • With reference to the mitigation work noted above, a qualified archaeologist must be appointed to undertake the work in terms of	

Summary of main issues raised by I&APs	Summary of response from EAP
the permit applied for as noted above; • If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA; • The Final BAR and EMPr must be submitted to SAHRA for record purposes; • The decision regarding the EA Application must be communicated to SAHRA and uploaded to the SAHRIS Case application.	
Charlton James Emmanuel	
• Was not aware of the plans to construct a cemetery on the said property. • Is not in favour of the proposed development. • Street as well as postal address was provided. • Existing drainage lines releasewater into his property where he cultivates lucerne. The water is also released into the Canal. • The corner area closest to the neighbourhood should not flush open during a rainy event, as it is possible that the graves (and	The information provided is noted. The engineers / designers will take the stormwater channel into consideration during the planning and development stage. A copy of the dBAR and fBAR was forwarded to all registered IAP's.

Summary of main issues raised by I&APs	Summary of response from EAP
bodies) can then flow downstream.	
Kousas Developments (PTY) LTD	
• Areas indicated in blue and orange belongs to the Church • The Church Council is not aware of the arrangement / consent given to the Municipality • It is stated that the Municipality received consent from the landowner to construct a cemetery on the area under assessment. • Adequate storm water management measures must be implemented in order to prevent water damage to the adjacent (and nearby) agricultural developments during the construction and operational phase. Flash floods can occur due to the close proximity of the two drainage lines to the east and west of the site.	• Correct. Please note that the Municipality and the Church is in discussion with one another regarding the proposed cemetery. This may include the transfer / registering of a servitude or include other alternative arrangements. Annexure A (of Annexure E_5) is an updated Map. A similar map will be included in the fBAR. • Please note that the Municipality and the Church is in discussion with one another regarding the proposed cemetery. Refer to Annexure B and C (of Annexure E_5). • Apologies. The Municipality received consent from the landowner to undertake the necessary studies for a cemetery. The Municipality and the Church is in discussion with one another regarding the proposed cemetery. This may include the transfer / registering of a servitude or include other alternative arrangements. Please refer to Annexure B and C (of Annexure E_5). • Noted. As stated in the Environmental Management Programme to be included in the fBAR, proper storm water management measures will be implemented during the construction and operational phase. Should the application be successful (receive Environmental Authorisation), all aspects included in the EMPr should be adhered to.

4. COMMENTS AND RESPONSE REPORT

The practitioner must record all comments received from I&APs and respond to each comment before the Draft BAR is submitted. The comments and responses must be captured in a comments and response report as prescribed in the EIA regulations and be attached to the Final BAR as Appendix E3.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person	Tel No	Fax No	E-mail	Postal address
Head of Department (Acting): Department of Roads And Public Works	Ms Ruth Palm				P.O. Box 3132 Kimberley 8301
NC DENC	Ms T Leburu	053 807 7464		tmakaudi@ncpg.gov.za	Northern Cape Department of Environment and Nature Conservation Provincial Building (First Floor) Corner of Rivier & Nelson Mandela Road Upington 8800
HoD: Department of Agriculture & Land Reform: NC	Mr Wvd Mothibi				Private Bag X5018 Kimberley 8300
Department of					Private Bag X5002 Kimberley

Authority/Organ of State	Contact person	Tel No	Fax No	E-mail	Postal address
Public Works: NC Property Manager					8300
Ward Councilor: Ward 7		054 461 6700	054 467 6401		11th Avenue 9 Kakamas 8870 Private Bag X6 Kakamas 8870
Local Municipal Manager	Dr. J. Mac Kay	054 461 6700	054 467 6401		11th Avenue 9 Kakamas 8870 Private Bag X6 Kakamas 8870
District Municipal Manager	Mr J.G. Lategan	054 337 2800	054 337 2888	admin@zfm-dm.gov.za	Private Bag X6039 Upington 8800 Cnr Nelson Mandela Avenue & Upington 26 Road Upington 8800
Chief Director: Northern Cape DWS	Mr Abe Abrahams	053 830 8800/6 7600 082 883 6741	Fax: (053) 831 4534	AbrahamsA@dws.gov.za	28 Central Road Beaconsfield KIMBERLY 8301 Private Bag X6101 KIMBERLEY 8300
Department of Agriculture,	Jacoline Mans		054 334 0030	jacolinema@daff.gov.za	P.O. Box 2782 Upington 8800

Authority/Organ of State	Contact person	Tel No	Fax No	E-mail	Postal address
Forestry & Fisheries					
SAHRA		021 462 4509	021 462 4502		P.O. Box 4637 CAPE TOWN 8000
Northern Cape Heritage	Mr Ratha Timothy (Manager)	053 8312537 0790369 295	053 8331435	ratha.timothy@gmail.com	1 Monridge Parl Cnr. Kekewich Drive & Memorial Road Kimberley 8300
ESKOM	Andrea van Gensen				Environmental Manager Land Development & Environment Northern Cape Operating Unit Eskom Holdings SOS Limited DSC Office Block 69 Memorial Road PO Box 606 Kimberley 8301
TELKOM	Ms H. Van den Heever	051 401 6829	051 401 6238	wayleacr@telkom.co.za	Telkom Wayleave Operations Manager Private Bag X20700 Bloemfontein 9300

Landowners of Adjacent Properties (1) Means of Notification: Hand Delivery on 29 October 2021	
Property	**Contact Person**
Erf 422	Francina Coetzee
Erf 423	Izak Bezuidenhoudt
Erf 424	Esesta Coetzee
Erf 419	David Jonkers
Erf 420	Leandrie E Jonkers
Erf 421	Elizabeth Bezuidenhoudt
Erf 332	Felisaty Jordien Swartz

Landowners of Adjacent Properties (1) Means of Notification: Hand Delivery on 29 October 2021	
Property	**Contact Person**
Erf 333	Susanna Rooi
Erf 334	Lizel Hassain
Erf 338	Lacy Swarts
Erf 339	Mary Witbooi
Erf 340	Fransiena C Frans
Erf 341	Information Unknown
Erf 314	Linda September
Erf 315	Evelin Maasdorp
Erf 316	Anna Kotze
Erf 320	Helena Kotze
Erf 325	Alice Brand

Landowners of Adjacent Properties (2) Means of Notification: Registered Post	
Property	**Owner**
Remainder of the erf 271 C02800050000027100000	SIYANDA DISTRICT MUNICIPALITY
Remainder of the erf 123 C02800100000012300000	Kai Garib Local Municipality
Erf 319 C02800050000031900000	Arborlane Estates (Pty) Ltd *Weltevreden Tweefontein Farm* Ceres, Western Cape 023 317 0617
Erf 262 C02800050000026200000	Kai Garib Local Municipality
Erf 326 C02800050000032600000	BARNARD JOHANNA MARGARETHA CRAFFORD mwmuse@mweb.co.za 0729486106 HAAKDORINGSTRAAT 27 WELGEVONDEN ESTATE STELLENBOSCH 7600
Erf 273 C02800050000027300000	KOUSAS INVESTMENTS PTY LTD PERSEEL 274 LUTZBURG

Landowners of Adjacent Properties (2) Means of Notification: Registered Post	
Property	**Owner**
	KAKAMAS 8870 SCHRODERSTRAAT 18 UPINGTON 8801 POSBUS 204 UPINGTON 8800
Erf 37 C02800050000003700000	KOUSAS INVESTMENTS PTY LTD PERSEEL 274 LUTZBURG KAKAMAS 8870 SCHRODERSTRAAT 18 UPINGTON 8801 P.O Box 204 UPINGTON 8800
Erf 272 C02800050000027200000	KOUSAS INVESTMENTS PTY LTD PERSEEL 274 LUTZBURG KAKAMAS 8870 SCHRODERSTRAAT 18 UPINGTON 8801 P.O Box 204 UPINGTON 8800
Erf 39 C02800050000003900000	CHARLTON JAMES EMMANUEL P.O. BOX 109

Landowners of Adjacent Properties (2) Means of Notification: Registered Post	
Property	**Owner**
	KAKAMAS 8870
Remaining extent of the KAKAMAS NORTH SETTLEMENT AGRICULTURAL HOLDING nr 261	KERKRAAD VAN DIE N G SENDINGGEMEENTE KAKAMAS
Erf 313	Kai Garib Local Municipality
Erf 317	Kai Garib Local Municipality
Erf 318	Kai Garib Local Municipality
Erf 319	Kai Garib Local Municipality
Erf 324	Kai Garib Local Municipality

Include proof that the Authorities and Organs of State received written notification of the proposed activities as appendix E4.

In the case of renewable energy projects, Eskom and the SKA Project Office must be included in the list of Organs of State.

6. CONSULTATION WITH OTHER STAKEHOLDERS

Note that, for any activities (linear or other) where deviation from the public participation requirements may be appropriate, the person conducting the public participation process may deviate from the requirements of that sub-regulation to the extent and in the manner as may be agreed to by the competent authority.

Proof of any such agreement must be provided, where applicable. Application for any deviation from the regulations relating to the public participation process must be submitted prior to the commencement of the public participation process.

A list of registered I&APs must be included as appendix E5.

Copies of any correspondence and minutes of any meetings held must be included in Appendix E6.

SECTION D: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014 and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts.

1. IMPACTS THAT MAY RESULT FROM THE PLANNING AND DESIGN, CONSTRUCTION, OPERATIONAL, DECOMMISSIONING AND CLOSURE PHASES AS WELL AS PROPOSED MANAGEMENT OF IDENTIFIED IMPACTS AND PROPOSED MITIGATION MEASURES

Provide a summary and anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the planning and design phase, construction phase, operational phase, decommissioning and closure phase, including impacts relating to the choice of site/activity/technology alternatives as well as the mitigation measures that may eliminate or reduce the potential impacts listed. This impact assessment must be applied to all the identified alternatives to the activities identified in Section A(2) of this report.

Compliance and Monitoring			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
Record keeping of compliance and monitoring reports	**Direct impacts:** • Non-conformance	High Negative	• The applicant will ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction. • An Environmental Control Officer (ECO) will be appointed to monitor the construction phase. Note that the ECO may be appointed separately or can be part of the contractor's team. • Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended. • Inspections should be documented, and any shortcomings addressed immediately. • A report will be provided by the independent ECO to the contractor upon completion thereof. The findings thereof should be made available to the competent authority (for example NC DENC, DWS), should it be requested. • Any emergency or unforeseen impact will be reported to the relevant environmental department within 24 hours after identification for telephonic approval and will be confirmed in writing. • Material Safety Data Sheets (MSDS) should be available on site. Where possible and available, MSDS should include information on ecological impacts and measures to minimize negative
	Indirect impacts: • Non-conformance	High Negative	
	Cumulative impacts: • Non-conformance	High Negative	

Compliance and Monitoring			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			environmental impacts during accidental releases or escapes. • Procedures in the MSDS should be implemented in case of an emergency. • The following documents should be available on site, and made available to the competent authority on request (if applicable): - Complaints Register - Environmental Incident Register - Disposal Certificates of Waste and Wastewater Generated during the construction / operational phase - Environmental Monitoring (Audit) Reports - Written Corrective Action Instructions - Environmental Authorisation - DWS Permit / License - Blasting Permit - Removal / Transplantation of protected species permits - EMPr

Planning and Design phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
Planning and design	**Direct impacts:** • None	Medium – High Negative	• No environmental mitigation measures are required during the planning phase on the proposed site, as no mitigation measures are to be implemented on site during the planning phase. • However, the applicant, engineers, environmental consultants and specialists should take the following steps during the planning phase: - Permits will be obtained for the removal / transplantation of protected species that are located within the construction area where no alternatives are possible (if any). - A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction phase. - The necessary Environmental Authorisation will be obtained before any activities listed in the Regulations are undertaken. - In addition, the necessary DWS registrations will be obtained, before any construction activities near watercourses are undertaken. - The necessary precautions regarding road safety will be implemented for construction work to be undertaken within road crossings (if any). - Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken.
	Indirect impacts: • None	Medium – High Negative	
	Cumulative impacts: • None	Medium – High Negative	

Planning and Design phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			- A blasting permit will be obtained before blasting activities is undertaken (if any). - The design and layout of the proposed project will take the possibility of flooding, erosion and pollution into consideration. - The Contractor must acquire a permit, issued by the relevant heritage resources authority, in the instance that any destruction, damage, excavation, alteration, defacing or any other disruption are to take place to any archaeological material (including infrastructures older than 60 years).
	Note: • Should the above not be taken into consideration during the Planning and Design Phase, the environmental impacts associated with the construction and operation phase will be of high significance as the environment will possibly be negatively affected.		

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
General measures to consider	**Direct impacts:** • Loss of vegetation • Loss of animal life • Erosion • Pollution • Noise • Nuisance dust	Negative	• Any construction is disruptive, and the environment must be given consideration with every activity undertaken. • All relevant standards relating to legislation should be adhered to (including waste emissions, waste disposal, noise regulations, etc.) • According to Section 28 of the NEMA Act 107, every person who cause, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring and if it can't be avoided or stopped, to minimize and rectify such pollution or degradation of the environment. • The pollution control provision in Section 19(1) of the National Water Act (Act 36 of 1998) should be adhered to at all times. • ECO should be provided with a layout of the site, indicating the position of the following prior to the site establishment, for acceptance: - Ablution Facilities - Storage Areas - Ready-mix Areas - Stockpile Areas - Waste Disposal Facilities - Hazardous Substances Storage Area
	Indirect impacts: • Possible outbreaks of fire • Pollution (groundwater, surface water, soil and air) • Erosion • Loss of biodiversity (vegetation & animal life) • Nuisance dust	High Negative	
	Cumulative impacts: • Possible outbreaks of fire • Pollution(groundwater, surface water, soil and air) • Erosion	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Loss of biodiversity (vegetation & animal life)		- Etc. • Designate the boundaries of the active construction start-up site, by erecting fencing / danger tape (where applicable). • Fence off operational footprint area (if possible) to ensure all operational activities are contained within the designate area. • All construction and operational activities must be contained within the demarcated construction area as determined in consultation with the ECO. • Care will be taken to prevent unnecessary damage to vegetation near to construction activities. • The necessary precautions regarding road safety will be implemented for construction work within road crossings (if any). • Proper sanitation, water and waste facilities will be in place for construction workers throughout the construction phase. • Chemical toilets will be cleaned and serviced regularly and proof thereof will be available on site. • Potable water will be made available daily to workers on site. • Fire-fighting equipment will be available on site, where applicable.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• If artefacts or graves are uncovered during construction activities, work in the immediate vicinity will be stopped until the project Archaeologist and SAHRA has been consulted. • Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting activities. • All relevant IAPs will be notified 24 hours prior to any known potential risks associated with the site and the activities to be undertaken on site.
Site access	**Direct impacts:** • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination	Medium Negative	• The current access road to the existing cemetery should be improved, when required. • Proper storm water measures are to be implemented to avoid run-off of water and washing of sand / soil onto the road. • Erosion measures will be implemented. • Removal of vegetation will be kept to the required area. • No animals will be hunted / captured on site (only to be undertaken by a relevant specialist).
	Indirect impacts: • Loss of vegetation • Loss of animal life • Erosion • Surface water contamination	High Negative	
	Cumulative impacts: • Loss of vegetation • Loss of animal life • Erosion	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Surface and groundwater contamination		
Employee conduct on site	**Direct impacts:** • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects	Medium Negative	• No animals may be harmed / captured / trapped and / or hunted. This must be strictly enforced. • Animals found at the construction site will be removed and relocated to an appropriate area, by a suitable, qualified person. • No open fires allowed. Provision will be made that no accidental fires are started. • No firewood will be collected on site or in surrounding areas, without written approval from the landowner. • No smoking or open fires will be allowed near storage facilities. • No waste may be dumped on site. • Employees should make use of the ablution facilities provided.
	Indirect impacts: • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects • Fire outbreaks	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Cumulative impacts: • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects • Fire outbreaks	High Negative	
Soil, erosion and vegetation management	**Direct impacts:** • Destruction of vegetation • Loss of topsoil • Loss of vegetative species of conservational concern • Noise elevation due to construction activities • Nuisance dust generation	Medium Negative	• Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily. • Access roads must be non-erosive, structurally stable and not induce flooding / safety hazard. • If any access road is impaired, it will be repaired immediately to prevent any future / further damage.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Visual impact of rock and spoil material dumps		• All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat. • Erosion management is important. Rehabilitation measures must be monitored to ensure that no erosion occurs and the disturbed should be adequately re-vegetated. • Concurrent rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation. • Stockpiled soil will be stockpiled in an area where it will not be disturbed by vehicles. • Stockpiled soil will be protected from washing away during rainstorms. For example: - Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events. - Stockpiles should not be higher than 1.5 m. - The gradient of stockpiles should not be greater than 1:1.5. • Stockpiles should be located away from drainage lines, watercourses and areas of temporary flood • All soil excavated is to be separated into top- and subsoil. Subsoil must be used for backfilling and topsoil for landscaping and rehabilitation of disturbed areas.
	Indirect impacts: • Erosion • Establishment of alien / invader vegetation species • Possible impact on heritage artefacts • Loss of fauna on site.	Medium Negative	
	Cumulative impacts: • Erosion • Establishment of alien vegetation species	Medium Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil should be of a sufficient depth. • Fertilizers should be used where topsoil and subsoil was mixed or not up to original standard. • Indigenous tree species in the vicinity of the operational site should be marked with danger tape. Disturbance to such species should be avoided, where possible • A permit for the removal of protected plant species will be obtained before the removal of these species (if any) are undertaken. • An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase. • Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof. • Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed immediately. • Fire fighting equipment will be available on site.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas. • Compacted soils (such as dirt tracks not to be utilised during the operational phase) must be ripped to ensure the establishment of natural occurring vegetation. • Concurrent rehabilitation should be undertaken, where possible. • Vegetation clearance will be limited to the required area. • Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways. • Dust control measures will be implemented if nuisance dust generation occurs during the construction period. • All archaeological findings (if any) should be recorded and reported to SAHRA. No construction activities in the area may proceed without the authorisation from SAHRA. • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• No animals may be captured (only by specialist) / harmed / killed on site. • Any occurrences of harmed animals should be reported to the ECO and recorded as such.
Minimise contamination and sterilisation of soil	**Direct impacts:** • Slow regrowth of natural occurring vegetation during the rehabilitation phase • Loss of vegetation • Contaminated soil	Medium Negative	• Use of potentially polluting and hazardous substances should be strictly controlled. • If soil is significantly contaminated by hazardous substances, then this soil is considered as hazardous and should be disposed of according to best practices. • Repair / maintenance will be conducted on site, and impacts like oil spills should be appropriately mitigated. Spill response procedures must be clearly defined and well known by all staff. • All threatened or protected plant species as specified by the NEM: Biodiversity Act (2004) will be identified on site. Permits are required for the removal / transplantation of these plants.
	Indirect impacts: • Loss of vegetation • Loss of animal life • Establishment of alien vegetation • Erosion	High Negative	
	Cumulative impacts: • Loss of vegetation • Loss of animal life • Establishment of alien vegetation • Erosion	High Negative	
Construction of graves	**Direct impacts:** • Visual impact of rock and spoil material	Medium – High Negative	• Site will be kept neat and tidy. • Appropriate area will be identified as a stockpiling area.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	dumps from graves excavation • Noise elevation due to construction activities • Nuisance dust generation		• Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways. • Dust control measures will be implemented if nuisance dust generation occurs during the construction period. • Stockpiled material will be stored in such a way to limit the loss thereof. For example: - Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events. - Stockpiles should not be higher than 1.5 m. - The gradient of stockpiles should not be greater than 1:1.5. • Noise control measures will be implemented. • All employees will be provided with the correct PPE. • Establishment of alien / invader vegetation will be monitored and these species will be removed by hand or by an approved chemical before gestation thereof. • All archaeological findings (if any) should be recorded and reported to SAHRA. No construction activities in the area may proceed without the necessary authorisation from SAHRA.
	Indirect impacts: • Erosion • Establishment of alien / invader vegetation species • Possible impact on heritage artefacts • Loss of fauna on site	Medium – High Negative	
	Cumulative impacts: • Erosion • Establishment of alien vegetation species	Medium – High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• Storm water measures will be implemented in order to manage storm water, and this will also prevent erosion. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis. • No animals may be captured (to be undertaken by a specialist) / harmed / killed on site. • Any occurrences of harmed animals should be reported to the ECO and recorded as such.
Ablution Facilities	**Direct impacts:** • Pollution of surface water runoff • Pollution of soil	Negative	• No open areas or the surrounding vegetation may be used as 'toilet facilities. • Toilets should be available for all employees. Where waterborne sewerage is not available, the ECO must designate an area within the boundaries of the site for the erection of portable chemical toilets. • Toilet facilities shall occur at a minimum ration of 1 toilet per 15 employees. • Toilets shall be maintained in a hygienic state and serviced when required. • Temporary toilets should be serviced regularly and the contents be removed to a licensed disposal facility.
	Indirect impacts: • Pollution of surface water runoff • Pollution of soil • Pollution of groundwater • Odour • Unnatural enrichment of soil • Promotion of unnatural vegetation growth	Medium Negative	
	Cumulative impacts:	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Pollution of surface water runoff • Pollution of soil • Pollution of groundwater • Odour • Unnatural enrichment of soil • Promotion of unnatural vegetation growth		
Safeguard water resources	**Direct impacts:** • Contamination of surface water resources	High Negative	• No activities will be undertaken within 32 m of a watercourse / within the 1:100 year floodline / 500m of a wetland, without the necessary authorisations (for example from NC DENC and DWS). • Caution will be taken to ensure that construction materials are not dumped or stored within storm water management systems. • Construction activities in the storm water infrastructure will be limited through proper demarcation and appropriate environmental awareness training. • The Contractor is responsible to inform all staff of the need to be vigilant against any practice that will have a harmful effect on waterways.
	Indirect impacts: • Erosion • Change in flow of water course • Pollution (surface water, groundwater and soil)	High Negative	
	Cumulative impacts: • Erosion • Change in flow of water course	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Pollution (surface water, groundwater and soil)		• Infilling, excavation, drainage and hardening of surfaces will not occur unnecessarily in storm water infrastructure. • Emergency plans will be in place in case of fuel spillages (to limit the occurrence of soil as well as groundwater pollution). • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction or operational phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills of any hazardous material be detected. • Weather forecasts from the South African Weather Bureau of up to three days in advance will be monitored on a daily basis to avoid exposing soil or construction works or materials during a storm event and appropriate action will be taken in advance to protect construction works should a storm event be forecasted. • All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO). • The design of drainage systems will ensure there is no contamination or eutrophication.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• Drainage systems will be maintained regularly in order to minimize the runoff of harmful chemical substances into the waterway(s). • It will be ensured that the construction activities have minimal effects on the flow of water through the storm water infrastructure. • No erosion or siltation may occur due to any construction or operational activities. • Occurrence of erosion will be monitored. Reparations will be undertaken as soon as possible.
Workings within / near to watercourses	**Direct impacts:** • Temporary blockage of water • Loss of vegetation • Loss of aquatic animal life • Erosion • Scouring	Medium – High Negative	• Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Construction activities in waterways should be undertaken in such a manner that no containment of water is required, where possible. 2/3 of the waterways may be diverted at a time, if needed. • The necessary authorisations should be obtained from DWS. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis.
	Indirect impacts: • Ponding of water during construction at waterways (due to blockage of waterways).	Medium – High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Surface and groundwater pollution due to spillage of potential hazardous substances such as hydraulic material and untreated sewage explained above. • Impact on waterways (including the natural habitat of the area), soil disturbances and including pollution. • Possible change of flow of water in waterways. • Erosion • Scouring • Loss of biodiversity		
	Cumulative impacts: • Erosion • Loss of vegetation • Scouring • Possible change of flow of water in waterways	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Loss of biodiversity		
Handling of waste / Waste Management (Note that waste refers to all construction debris and domestic waste generated due to construction activities.)	**Direct impacts:** • Spillage of material to be utilised during the construction phase as well as untreated sewage to the surrounding environment • Dumping of construction rubble and general waste on site	Medium – High Negative	• The contractor is responsible for the removal of construction waste. • Suitable containers (weather and vermin proof) will be placed on site to collect all solid waste. These will be emptied regularly. • No littering is permitted. During the construction and operational phase the site will be maintained in a neat and tidy condition. • All solid waste produced will be disposed of at an authorized landfill site. Recyclable waste may also be sold to recycling contractors. • No dumping, burning or burying of waste will be undertaken on site. • All hazardous waste will be disposed of at an authorized hazardous landfill site. • Recyclable hazardous waste will be re-used or sold to recycling contractors, where possible. • A waste management plan will be compiled and designed to ensure adequate waste management activities. • Areas used for waste storage and loading of materials should be lined and bund walls have to be erected to contain any spills that might occur.
	Indirect impacts: • Surface and groundwater pollution due to spillage of potential hazardous substances such as hydraulic material and untreated sewage. • Impact on waterways (including the natural habitat of the area), including pollution.	Medium – High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Pollution of soil		• Waybills providing evidence of correct disposal procedure must be provided for the ECO's inspection. • Waste classification should be undertaken. • Visual inspections for the occurrence of pollution should be undertaken daily. • Spills should be cleaned up immediately according to best practices. • DWS should be notified of any spillage / pollution of water sources (groundwater and / or surface water) within 24 hours of occurrence. • Record should be kept on site to indicate date of visual inspection, any spillages observed, and manner in which spill was treated.
	Cumulative impacts: • Pollution of downstream watercourses • Pollution of soil • Pollution of groundwater • Air pollution	Medium – High Negative	
Health, safety and security	**Direct impacts:** • Road safety at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry	Medium Negative	• Site should be fenced / marked with danger tape, where possible. • The contractors will comply with the Occupational Health and Safety Act, National Building Regulations and any other national, regional or local regulations with regard to safety on site. • Construction contracts will include safety and security measures for staff.
	Indirect impacts:	Medium Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Loss of vegetation and animal life due to possible fire outbreaks • Road safety issues at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry		• Precautions to ensure that construction staff and sites are visible and proper PPE will be provided to all employees. • Suitable warning and information signage should be available at the storage facilities. In addition, telephone numbers of emergency services (including local firefighting services) must be posted conspicuously on site. • Employees should be made aware of the health risks associated with any hazardous substances / dangerous goods used or stored on site. This includes soil that was contaminated with oil or diesel, etc. • Employees should receive relevant safety training in handling of hazardous substances / dangerous goods associated with the proposed project. • Construction work within road reserves will accommodate road users as far as possible. This includes the following: - Roads will be crossed in half widths at a time to minimise the impact on vehicular traffic, where possible. - Construction along and across existing roads will be executed in such a manner that both pedestrian and vehicular traffic is accommodated at all times.
	Cumulative impacts: • Loss of vegetation and animal life due to possible fire outbreaks • Road safety issues at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry	Low Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			- The contractor will be required to maintain adequate access to all public and private property at all times. - Contractor will supply, erect and maintain road signs for all work areas conforming to the prescribed layout and requirement of the South African Road Traffic Signs Manual and other relevant notices. • Fire extinguishers will be available on site and in the construction camp (if any). • The contractor will be required to maintain adequate access to all public and private property at all times. • Speed limits of 20km/h will be enforced. • All relevant IAPs will be notified prior to any blasting activities. • All relevant IAPs will be notified 24 hours prior to any known potential risks associated with the site and the activities to be undertaken on site. • The necessary precautions with regard to road safety will be implemented for construction work within road crossings. • All injuries should be recorded.
Heritage	**Direct impacts:** • Harm to unknown heritage resources	Negative	• In the case of the discovery of any heritage, archaeological or palaeontological significance, the work in the area will be stopped and reported

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			to the archaeologist and SAHRA. Any construction activities in the nearby vicinity may only commence after approval is obtained from SAHRA as well as the ECO. • If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA • Known heritage resources (if any) must be avoided as far as possible. • Employees should be encouraged and informed of the need to be on the look-out for potential fossils / buried archaeological material. • In the case of the discovery of any stone tools or other archaeological or palaentological material, the work in the immediate vicinity should temporarily cease and reported to the archaeologist and SAHRA. Should any human remains be exposed, the archaeologist as well as the local SAPS should be notified.
	Indirect impacts: • Loss of heritage resources	High Negative	
	Cumulative impacts: • Loss of heritage resources	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt / Phillip Hine; 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase / Mimi Seetelo; 012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule. • Appropriate measures should be undertaken by the ECO until the archaeologist / SAPS visits the site. This should include the following: – Site should be fenced with 'danger tape'

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			– Position of finding should be recorded – Depth of finding should be recorded – Digital image of the finding should be taken – No information on the findings may be made public without the consent of the archaeologist / SAPS. – Construction activities in the area may only continue after approval from the archaeologist and SAHRA.
Noise and dust control	**Direct impacts:** • Elevation of noise levels • Generation of nuisance dust	Negative	• Construction activities will be limited to normal daytime hours, where possible. • Noise levels will be kept as low as possible during the construction phase in order not to disturb adjacent landowners. • Proper mitigation measures will be implemented to limit noise (e.g. the installation of silencers, where required). • Proper mitigation measures will be implemented to limit the formation of dust (e.g. wetting of construction area, when required). • The speed of the construction vehicles will be limited to avoid dangerous conditions, the formation of dust and the excessive deterioration of roads being used.
	Indirect impacts: • Air pollution • Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / occupants	Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Cumulative impacts: • Air pollution • Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / occupants	Negative	
Handling and Storage of materials	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• All chemicals used during the development, including fuel, will be stored in a proper storeroom or protected area to prevent pollution. • Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere. • Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary. • Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Injuries • Health issues		• All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment. • Spill response equipment must be available during the handling and loading of hazardous waste (if any) • Hazardous substances are to be stored in bunded areas. • Bund walls will have a capacity of at least 110% of the total capacity of the stored volume. • No oil, diesel or other chemicals may be spilled or discharged anywhere and contact with bare soil should be avoided at all cost. • Drip trays will be used during the servicing of vehicles as well as the transfer of chemicals / substances from transportation vehicles. • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected. • Material stockpiles must be stable and well secured to avoid collapse and possible injury.
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• Material and Safety Data Sheets (MSDSs) should be readily available on site for all hazardous materials. MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. • Storage areas should be kept clean and free from any accumulation of combustible matter (such as paper) and any possible source of ignition should be removed.
Hazardous waste management	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Hazardous wastes must be separated from general wastes, stored within secondary containment in appropriate containers. • Proper storage facilities for the storage of hazardous / dangerous goods must be provided to prevent the migration of spillage into the soil and or groundwater. • Certificates / waybills of hazardous waste disposals are to be available on request as well as auditing purposes. This includes the removal of soil contaminated with hydrocarbons. • Storage of hazardous substances and refuelling areas are to be bunded with an impermeable liner to protect groundwater quality and must comply with the relevant SANS codes.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Injuries • Health issues		• Areas used for the storage of hazardous materials are to be clearly indicated as such.
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
Hazardous and Flammable materials: Delivery	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• All deliveries (especially of hazardous nature) must be supervised. • Subcontractors and delivery companies should be informed of the delivery procedures and made aware of restrictions as to where materials may be stored. • Loads must be secured to prevent spillage during transportation thereof. • Hazardous substances are to be transported in sealed drums or bags.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Surface and groundwater pollution • Injuries • Health issues		
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
Hazardous and Flammable materials: Cement and / or concrete mixing	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Limit cement and concrete mixing to single sites, where possible. • No mixing allowed directly onto the ground. • All visible remains of excess material will be treated as hazardous waste. • Solid concrete waste may be treated as inert construction rubble. However, wet cement, liquid slurry and cement powder must be treated as hazardous waste.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues		
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
Hazardous and Flammable materials: Gas Storage	**Direct impacts:** • Air pollution • Fire outbreaks • Injuries • Health issues	High Negative	• All combustible materials are to be store at least 3 m from any gas storage areas. In case of any flammable or any other gas storage areas, open flames, welding and cutting operations, smoking, etc. shall be prohibited in or near the storage area. • No gas will be delivered until the site is registered with local Fire Safety.
	Indirect impacts: • Air pollution • Fire outbreaks • Injuries • Health issues	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Cumulative impacts: • Air pollution • Fire outbreaks • Injuries • Health issues	High Negative	• Cylinders should always be stored in a well-ventilated area away from spark, flames or any source of heat or ignition. • Cylinders should always be handled, stored, used and transported in an upright position. It should not be dropped, dragged or rolled on their sides or allowed to skid. Cylinders that are too large to be carried shall be tilted and rolled on the rims of their foot rings or bases. • Valves should be kept properly closed
Hazardous and Flammable materials: Chemicals, Grease and Oil Storage	**Direct impacts:** • Soil pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Storage areas must be bunded and hard surfaced in order to protect groundwater quality • Compliance with SANS codes and hazardous substances bylaws should be adhered to • All lids must be properly sealed / closed to prevent Volatile Organic Compounds (VOCs) and other potentially harmful gaseous compounds from escaping.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
Hazardous and Flammable materials: Hydrocarbon spillages	**Direct impacts:** • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Spill kits are to be made permanently available at areas which have the potential to be subjected to spillage of hazardous substances and dangerous goods. • Remediation of spillages must be conducted immediately and closed out within 24 hours. • No waste water or waste will be disposed of into the surrounding environment at any time. Water collected in bunded areas must be collected in containers and disposed of as hazardous waste. • Machinery will be kept maintained in line with manufactures specifications to minimise the risk of hydrocarbon spillages. • An incident reporting system will be implemented in order to ensure incidents, where spillages has occurred, are closed out and appropriate measures are taken to prevent further incidents.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
	Cumulative impacts:	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues		• Incidents must be reported to DWS within 24 hours. • Contaminated soil must be disposed of in a hazardous materials skip and removed to a licensed hazardous landfill facility by a licensed contractor. • Contaminated water must be decanted into drums and stored until disposal by a registered waste transported is undertaken.

Operational phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
This phase consists of the use of the cemetery	**Direct impacts:** • Deterioration of the infrastructure in the long term. • Reach its capacity	Medium – Low Negative	• Maintenance and repair will be undertaken on the infrastructure when necessary. • Soil erosion occurrences will be attended to immediately. • Establishment of alien vegetation will be monitored and alien species will be removed by hand or by an approved chemical before gestation thereof. • Proper monitoring of various aspects (such as monitoring of the potable water quality should the potable water not be obtained from the municipal supplies) should be undertaken on a regular basis. • An emergency plan should be developed in case the potable water does not conform to the DWS standards.
	Indirect impacts: • Establishment of alien / invader species due to previous disturbance will also be associated with this phase. • Erosion • Illegal digging of new graves outside cemetery boundaries • Plundering of graves & cemetery in general	Medium – Low Negative	
	Cumulative impacts:	Medium – Low Negative	

Operational phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Establishment of alien / invader species due to previous disturbance will also be associated with this phase. • Erosion • Illegal digging of new graves outside cemetery boundaries • Plundering of graves & cemetery in general		

Decommissioning phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
It is not anticipated that the proposed project will cease in the nearby future. However, if decommissioning is decided upon, a rehabilitation plan will be developed and submitted for approval. The end-use of the area will be kept in mind during the compilation of the rehabilitation plan. Activities associated with the decommissioning phase discussed in this document will be limited to the rehabilitation of areas disturbed during the construction phase.	**Direct impacts:** • Rehabilitation of disturbed area • Re-vegetation • Limit occurrence of erosion • Proper stormwater control • No ponding on site • Limit visual impact	Medium Positive	• Temporary structures and office sites (if any) will be dismantled and removed after completion of the construction phase of the project. • All waste, equipment, materials, etc. used during construction will be cleared from the site. The contractors will ensure that the site is cleared and rehabilitated to the satisfaction of the ECO. • An alien plant control and monitoring programme will be implemented. • Re-vegetation of disturbed areas will be undertaken with site indigenous species. Hydro-seeding will be implemented if the establishment of natural occurring vegetation does not occur within reasonable time. • Temporary concrete surfaces (if any) will be removed and compacted areas ripped. • The establishment of natural occurring vegetation will be encouraged at disturbed areas. Hydro-seeding will be undertaken if natural regrowth is insufficient. • Establishment of extensive alien species will be monitored.
	Indirect impacts: • Rehabilitation of disturbed area	Medium Positive	
	Cumulative impacts: • Rehabilitation of disturbed area	Medium Positive	

Decommissioning phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
All disturbed areas will be rehabilitated according to best practices.			

No-go Option			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
Keeping the status quo – limited burial spaces will be available to the community	**Direct impacts:** • No direct environmental impacts.	N/A	• Patrolling should be implemented by the municipality to ensure that no illegal graves are constructed onto adjacent properties.
	Indirect impacts: • Community members will have to bury their loved ones at a cemetery in neighbouring towns (if space is available) • The above is a costly alternative to the community members. • It should also be kept in mind that cemeteries of adjacent towns are also fairly full and therefore this option cannot be seen as a reasonable alternative.	High Negative	

No-go Option			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Community members will make use of adjacent property as an illegal cemetery.		
	Cumulative impacts: • Community members will have to bury their loved ones at a cemetery in neighbouring towns (if space is available) • The above is a costly alternative to the community members. • It should also be kept in mind that cemeteries of adjacent towns are also fairly full and therefore this option cannot be	High Negative	

No-go Option			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	seen as a reasonable alternative. • Community members will make use of adjacent property as an illegal cemetery.		

A complete impact assessment in terms of Regulation 19(3) of GN 733 must be included as Appendix F.

2. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that summarises the impact that the proposed activity and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

Environmental impact statement for the proposed construction of a cemetery, Lutzburg			
Alternative 1 Preferred			
Nr	**Impact**	**Without Mitigation**	**With Mitigation**
1	Impacts on vegetation and listed or protected plant species resulting from the construction phase	High Negative	Low-Medium Negative
2	Impacts on animal species resulting from construction activities	Medium-Low Negative	Low Negative
3	Erosion	High Negative	Low Negative
4	Pollution	High Negative	Low Negative
5	Health and Safety	Medium Negative	Low Negative
6	Heritage, including archaeological and paleontological	Medium-Low Negative	Low Negative
7	Visual and noise	Medium-Low Negative	Low Negative

Alternative 1 Preferred -Construction of a new cemetery

- The construction of a new cemetery is proposed.
- Preparation and development of the cemetery (including construction of new road) will result in the destruction of the vegetation.
- Erosion control measures should be implemented.
- The project will provide for new burial sites for future usage.
- The possible impacts associated with the proposed project can be minimised if the recommended mitigation measures as mentioned in this document and the EMPr is adhered to.
- Removal and transplantation of protected plant species

Alternative 2 Locality

- Another option is to expand the existing cemetery.
- However, option is not seen as a reasonable / feasible alternative, as the existing cemetery already reached the borders of the property.

Alternative 3Design & Layout

- The geographic information as well as the existing road network in close proximity of the proposed site was taken into consideration. No alternative layout / design was considered as a feasible / reasonable alternative.

Alternative 4Technology

- As part of this alternative, the construction of graves is only to be done by hand during the operational phase.
- However, this option is not recommended due to the:
  - Type of soil (hard) encountered on site - the community members will not be able to dig the graves to the acceptable depths.
  - High number of burials per week.
- Therefore, this option was not discussed throughout the current document.

No-go alternative (compulsory)

- Utilising the existing cemetery.
  The existing cemetery in the region has reached its capacity and is therefore inadequate for the need of the community. This option is thus not seen as a feasible / reasonable alternative.

- No direct environmental impacts are foreseen if the no-go alternative is decided upon.
- However, no approved burial sites will be available.
- Possible health and safety issues, as bodies will be buried in shallow, hand dug graves in unsuitable areas will occur.

SECTION E. RECOMMENDATION OF PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the environmental assessment practitioner)?	YES	

If "NO", indicate the aspects that should be assessed further as part of a Scoping and EIA process before a decision can be made (list the aspects that require further assessment).

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application.

Refer to the EMPr in Appendix G for recommended mitigation measures.

Is an EMPr attached?	YES	

The EMPr must be attached as Appendix G.

The details of the EAP who compiled the BAR and the expertise of the EAP to perform the Basic Assessment process must be included as Appendix H.

If any specialist reports were used during the compilation of this BAR, please attach the declaration of interest for each specialist in Appendix I.

Any other information relevant to this application and not previously included must be attached in Appendix J.

Neil Devenish
NAME OF EAP

SIGNATURE OF EAP

24/03/2022
DATE

SECTION F: APPENDIXES

The following appendixes must be attached:

Appendix A: Maps

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Specialist reports (including terms of reference)
- Appendix D_1: Heritage
- Appendix D_2: Ecological
- Appendix D_3: Preliminary Design Report / Services Report
- Appendix D_4: Traffic Impact Study
- Appendix D_5: Geohydrological Report
- Appendix D_6: Geotechnical Report

Appendix E: Public Participation
- Appendix E_1: List of identified possible IAPs
- Appendix E_2: Proof of notification
- Appendix E_3: List of registered parties
- Appendix E_4: List of comments received
- Appendix E_5: Response to comments received
- Appendix E_6: Proof of submission of dBAR to registered parties

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

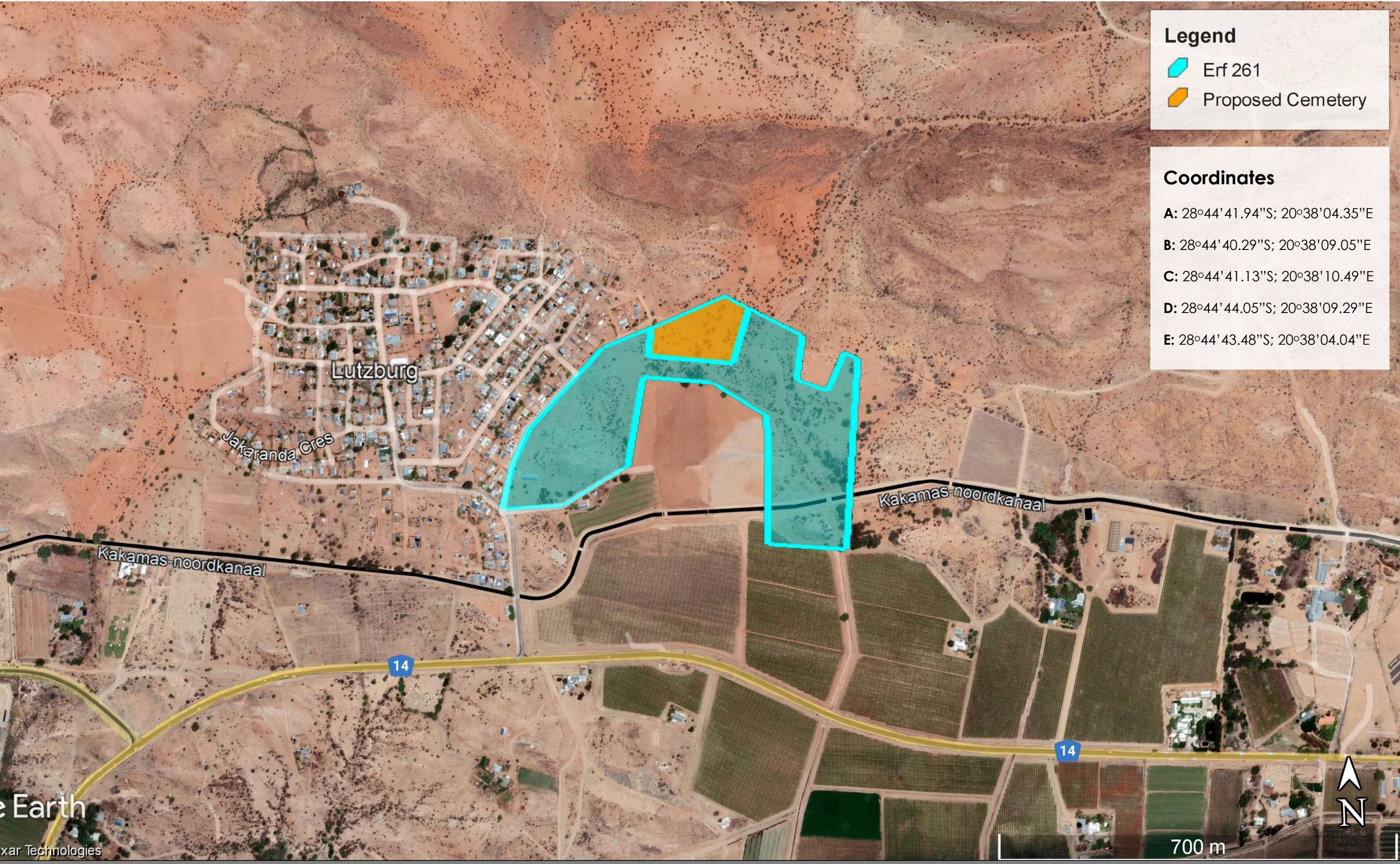
Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest
- **NOTE: Declaration by EAP is attached to Appendix H.**
- Heritage
- Ecological
- Geotechnical
- Geohydrological

Appendix J: Additional Information
- Appendix J_1: Confirmation from Municipality
- Appendix J_2: Title Deed Document

APPENDIX A

Maps



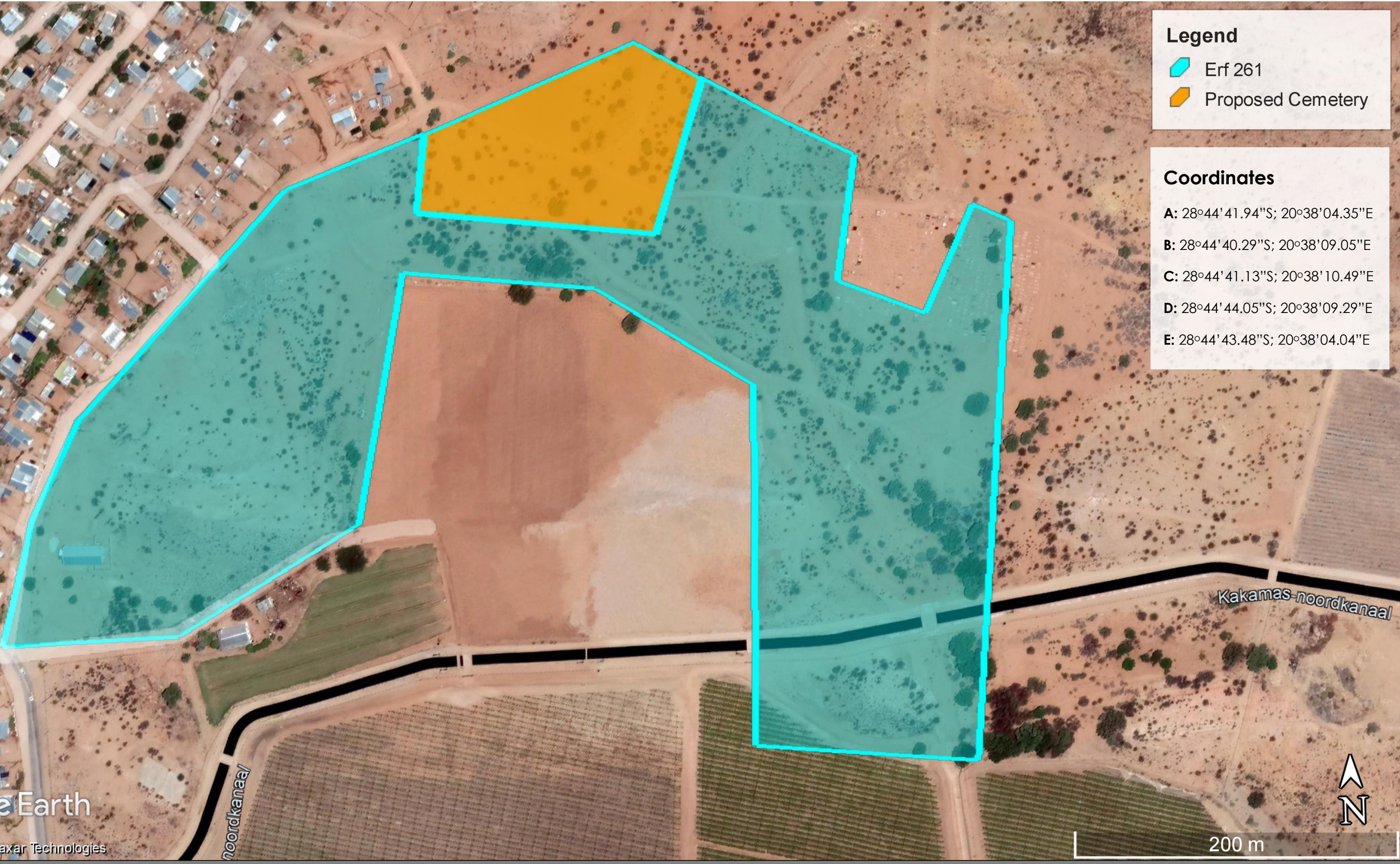
TYPE OF PLAN: LOCALITY PLAN

mda
Town & Regional Planners, Environmental & Development Consultants
T: 051 447 1583 | P.O. Box 20298, Willows, Bloemfontein, 9320
F: 086 455 2568 | 9 Barnes Street, Westdene, Bloemfontein, 9301

PROJECT:
THE PROPOSED CONSTRUCTION OF A CEMETERY, LUTZBURG

PROJECT BY:
KAI !GARIB LOCAL MUNICIPALITY

DRAWN BY:
HS



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PROJECT:
THE PROPOSED CONSTRUCTION OF A CEMETERY, LUTZBURG

PROJECT BY:
KAI !GARIB LOCAL MUNICIPALITY

DRAWN BY:
HS

APPENDIX B

Photographs

Figure 1: Panorama of the proposed graveyard site. The site is clearly dominated by a sparse tree layer with well-developed grass layer and herbaceous component.

Figure 2: Another panorama of the site with notable vegetation clearing also visible. Note also rocky ridges in the background which confirms that such habitats are absent from the site.

Figure 3: View of the small drainage line bordering the site to the west. It is notably small but as a storm water channel, impacts on it should still be prevented.

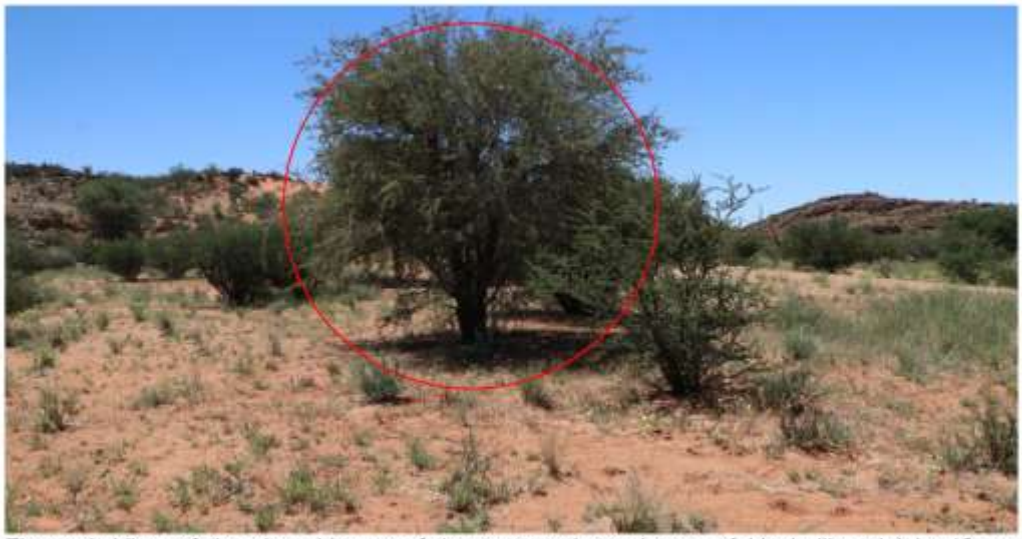


Figure 4: View of the site with one of the protected specimens of *Vachellia erioloba* (Camel Thorn Tree) visible. Several of these trees are present on the site.

Figure 5: Only one specimen of the protected *Boscia albitrunca* (Shepherds Tree) could be identified on the site.

Figure 6: Several dirt tracks cause disturbance of the vegetation. Note also the uran area of Lutzburg in the background.

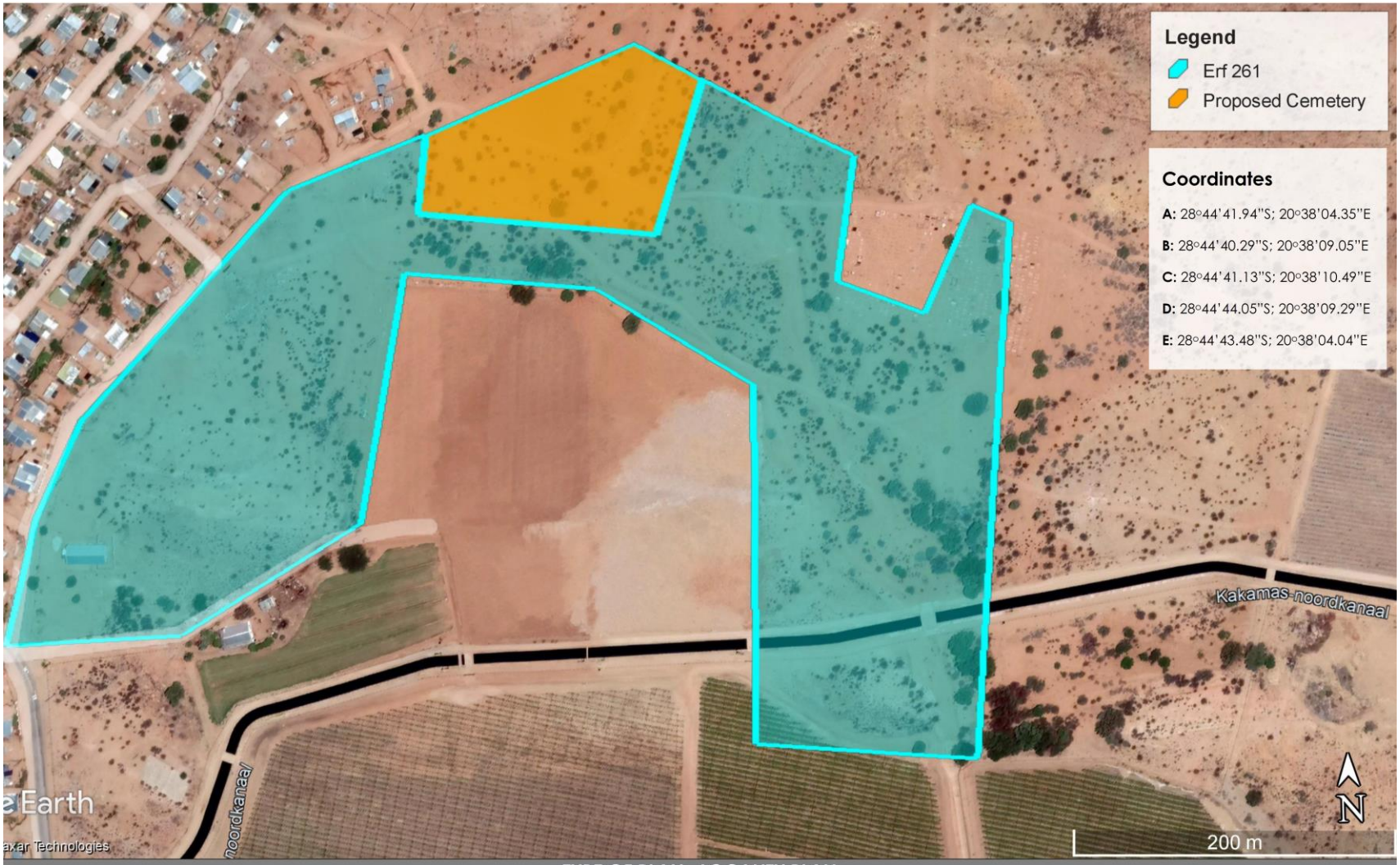
Figure 7: The drainage line to the east of the site is visibly quite large though as it is located more than 30 meters from the site should not be affected by the development.

Figure 8: Patches of the threatened Lower Gariep Alluvial Vegetation in the surrounding area is characterised by a denser tree/shrub cover and a few riparian species.

Figure 9: One of the burrows on the site belonging to either the Ground Squirrel (*Xerus inauris*) or Yellow Mongoose (*Cynictis penicillata*).

APPENDIX C

Facility Illustration(s)



TYPE OF PLAN: LOCALITY PLAN

mda
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PROJECT:
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APPENDIX D

Specialist Reports

APPENDIX D_1

Heritage Report

Phase 1 Heritage Impact Assessment for proposed new Lutzburg Cemetery, Kakamas NC Province.

Report prepared by Palaeo Field Services, PO Box 38806 Langenhovenpark 9330.

07 / 05 / 2021

Summary

The proposed development footprint covers a 1ha area that is underlain by palaeontologically insignificant intrusive rocks that are capped by palaeontologically sterile superficial deposits (Kalahari Group calretes and sandy soils). As far as the palaeontological heritage is concerned, the proposed development may proceed with no further palaeontological assessments required. The site is not considered archaeologically vulnerable, and there are no major archaeological grounds to suspend the proposed developments, provided that all excavation activities are confined to within the confines of the development footprint. The site is assigned a site rating of Generally Protected C.

Introduction

A Phase 1 Heritage Impact Assessment was carried out for the establishment of a proposed new cemetery located at the Lutzburg settlement near Kakamas (**Fig. 1**). The extent of the proposed development (over 5000 m2) falls within the requirements for a Heritage Impact Assessment (HIA) as required by Section 38 (Heritage Resources Management) of the South African National Heritage Resources Act (Act No. 25 of 1999). The assessment involved identification of possible archaeological and paleontological sites or occurrences in the proposed zone, an assessment of their significance, possible impact by the proposed development and recommendations for mitigation where relevant.

Site Information

1 : 50 000 scale topographic map 2820DA Marchand

1 : 250 000 scale geological map 2820 Upington

Centroid coordinates of proposed site: 28°44'41.86"S 20°38'8.29"E

The site covers a 1ha area, located about 50 m to the east of the Lutzburg settlement and about 500m due north of the N14 national road between Kakamas and Keimoes (**Fig. 2 & 3**). The proposed new cemetery site covers open rocky terrain that is capped by a veneer of wind-blown sand (**Fig. 4**).

Methodology

The palaeontological and archaeological significance of the affected area was evaluated through a desktop study and carried out on the basis of existing field data, database information, published literature and maps. This was followed up with a field assessment by means of a pedestrian survey and investigation of all exposed sections within the footprint. A Garmin Etrex Vista GPS hand model (set to the WGS 84 map datum) and a digital camera were used for recording purposes.

Site significance classification standards prescribed by SAHRA (2005) were used to indicate overall significance and mitigation procedures where relevant (**Table 1**).

Background

Palaeontology

According to the 1 : 250 000 scale geological map of the area (2820 Upington, Council for Geoscience, Pretoria) the proposed development footprints are underlain by well-developed, superficial deposits located on intrusive Makolian rocks of the Kakamas Terrane (pink weathering Riemvasmaak gneis, *Mrm*, **Fig. 5**). These rocks are not considered to be palaeontological significant because of the intrusive nature of the strata. The superficial sediments within the study area are made up of Kalahari Group (Quaternary) windblown sand and calcretes. While carbonate-rich overbank deposits associated with large river courses can be potentially fossiliferous, there are currently no records of Quaternary fossil localities within the vicinity of the proposed study areas.

Archaeology

The presence of Early, Middle and Later Stone Age artefacts on the Middle Orange River landscape bears evidence of long-term human habitation during prehistoric times (Rudner 1969; Beaumont et al. 1995; Badenhorst et al. 2015). Archaeological and historical evidence also show that the region was extensively occupied by Khoi herders and San hunter-gatherers during the last 2000 years. Khoi groups such as the Einiqua occupied the area around and east of the Augrabies Falls while the Korana occupied the Middle-Upper Orange River further to the east (Burchell 1822; Penn 2005). A large number of burial cairns were recorded on the Orange River in the Kakamas area on the farms Renosterkop, Rooipad and Augrabies Town and appear to be related to Khoekhoen people, specifically the Einiqua, and historical data shows that a large number of the graves date to the 18th and early 19th centuries (Dreyer & Meiring 1937; Morris 1992, 1995). Rock engraving sites are known to occur along rocky outcrops within the younger valley fills associated with the Orange River in the region (Van Riet Lowe 1941).

Field Assessment

The study area consists of severely degraded terrain made up of an admixture of weathered bedrock (gneiss) and Kalahari Group sand. Investigation of superficial cuttings and deflation hollows located within the study area revealed no evidence of Quaternary fossil remains or exposures. There is no aboveground evidence of intact Stone Age archaeological assemblages or sites, prehistoric structures, previously unrecorded or unmarked graves, or historically significant structures older than 60 years within the study area. A small military graveyard and declared heritage site is located about 300m to the north of the northern boundary of the study area (*GPS coordinates 28°44'36.31"S 20°38'8.55"E*, **Fig. 2, 3 & 6**). The graveyard, including a monument, commemorates a number of German soldiers who were killed in a battle against a force of the Union of South Africa, which took place here on the 4th February 1915, following the German Commander in Chief in South West Africa's decision to attack Kakamas during World War 1.

Impact Statement and Recommendations

The chances of palaeontological impact resulting from the proposed development are considered to be improbable because of the nature of the underlying geology. As far as the palaeontological heritage is concerned, the proposed development may proceed with no further palaeontological assessments required. If, in the unlikely event that localized fossil material is discovered within the superficial overburden during the construction phase of the project, it is recommended that a professional palaeontologist be called in to record and rescue the fossils where necessary.

The study areas are located within a region that has previously yielded ample archaeological as well as historical evidence of the early movement and settlement of Khoi herders and San hunter-gatherers along the Orange River during the last 2000 years. However, the proposed development footprint is located on fairly degraded terrain resulting from previous and ongoing human activities related to the Lutzburg settlement located 400 m to the west of the existing cemetery.

The proposed development area is not considered archaeologically vulnerable and there are no major archaeological grounds to suspend the proposed development, provided that all excavation activities are confined to within the confines of the development footprint. The proposed development footprint is considered to be of low archaeological significance and is assigned a site rating of Generally Protected C **(Table 1).**

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DECLARATION OF INDEPENDENCE

I, Lloyd Rossouw, declare that I act as an independent specialist consultant. I do not have or will not have any financial interest in the undertaking of the activity other than remuneration for work as stipulated in the terms of reference. I have no interest in secondary or downstream developments as a result of the authorization of this project and have no conflicting interests in the undertaking of the activity.

Tables and Figures

Table 1. Field rating categories as prescribed by SAHRA.

Field Rating	**Grade**	**Significance**	**Mitigation**
National Significance (NS)	Grade 1	-	Conservation; national site nomination
Provincial Significance (PS)	Grade 2	-	Conservation; provincial site nomination
Local Significance (LS)	Grade 3A	High significance	Conservation; mitigation not advised
Local Significance (LS)	Grade 3B	High significance	Mitigation (part of site should be retained)
Generally Protected A (GP.A)	-	High/medium significance	Mitigation before destruction
Generally Protected B (GP.B)	-	Medium significance	Recording before destruction
Generally Protected C (GP.C)	-	Low significance	Destruction

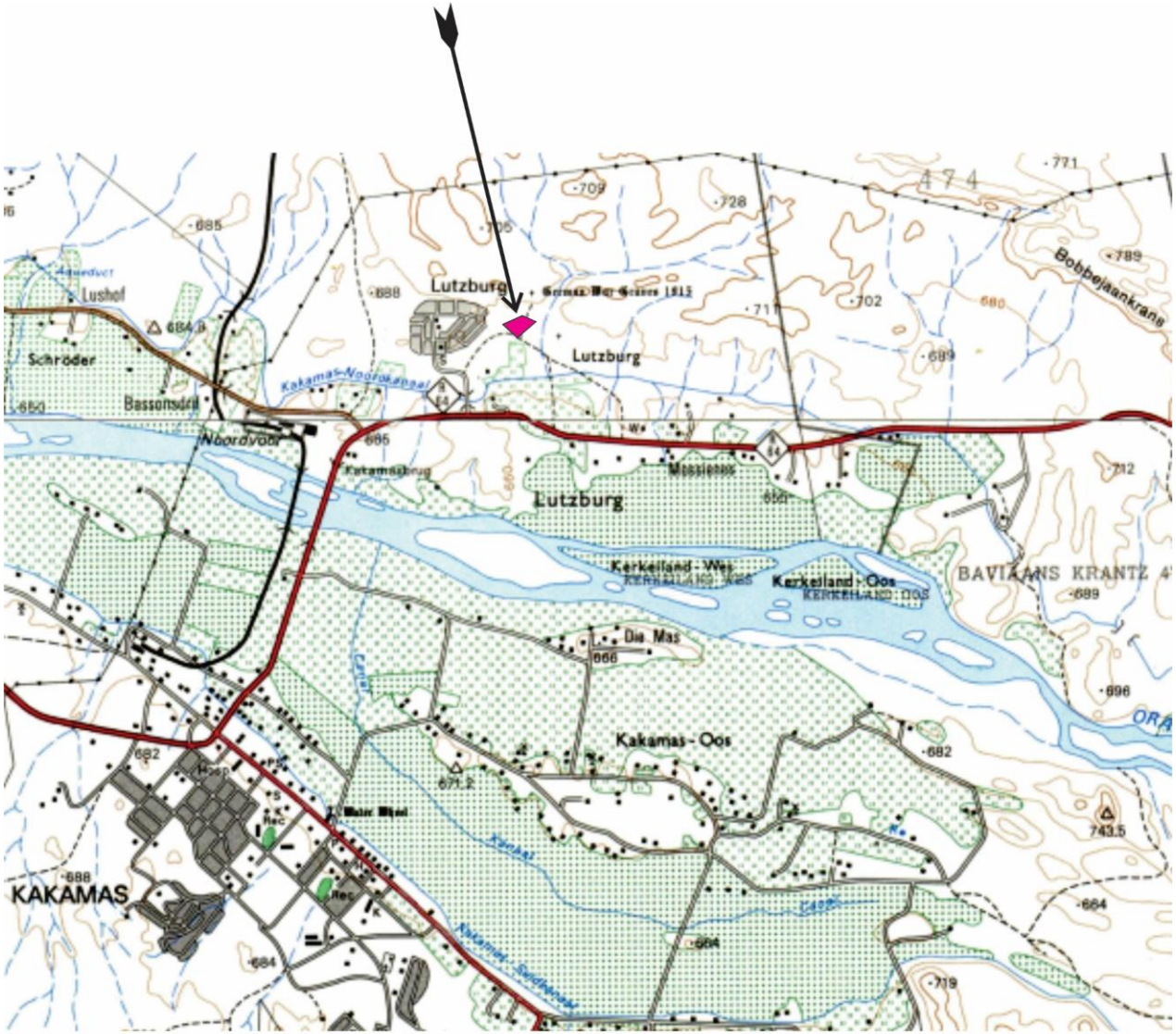

Figure 1. Map of the proposed study area (red polygon) on portion of 1:50 000 scale topographic map 2820 DA Marchand)

Figure 2. Aerial view of the study area. A historical, military graveyard is located in the foothills about 120 m to the north of the study area and will not be affected by the proposed development. The existing cemetery is situated bout 150 m due east of the study area.

Figure 3. General view of the existing cemetery at Lutzburg, looking northeast (above) and north (below). The red arrow marks the location of the war graves site.

Figure 4. The terrain is capped by a well-developed veneer of unconsolidated sand.

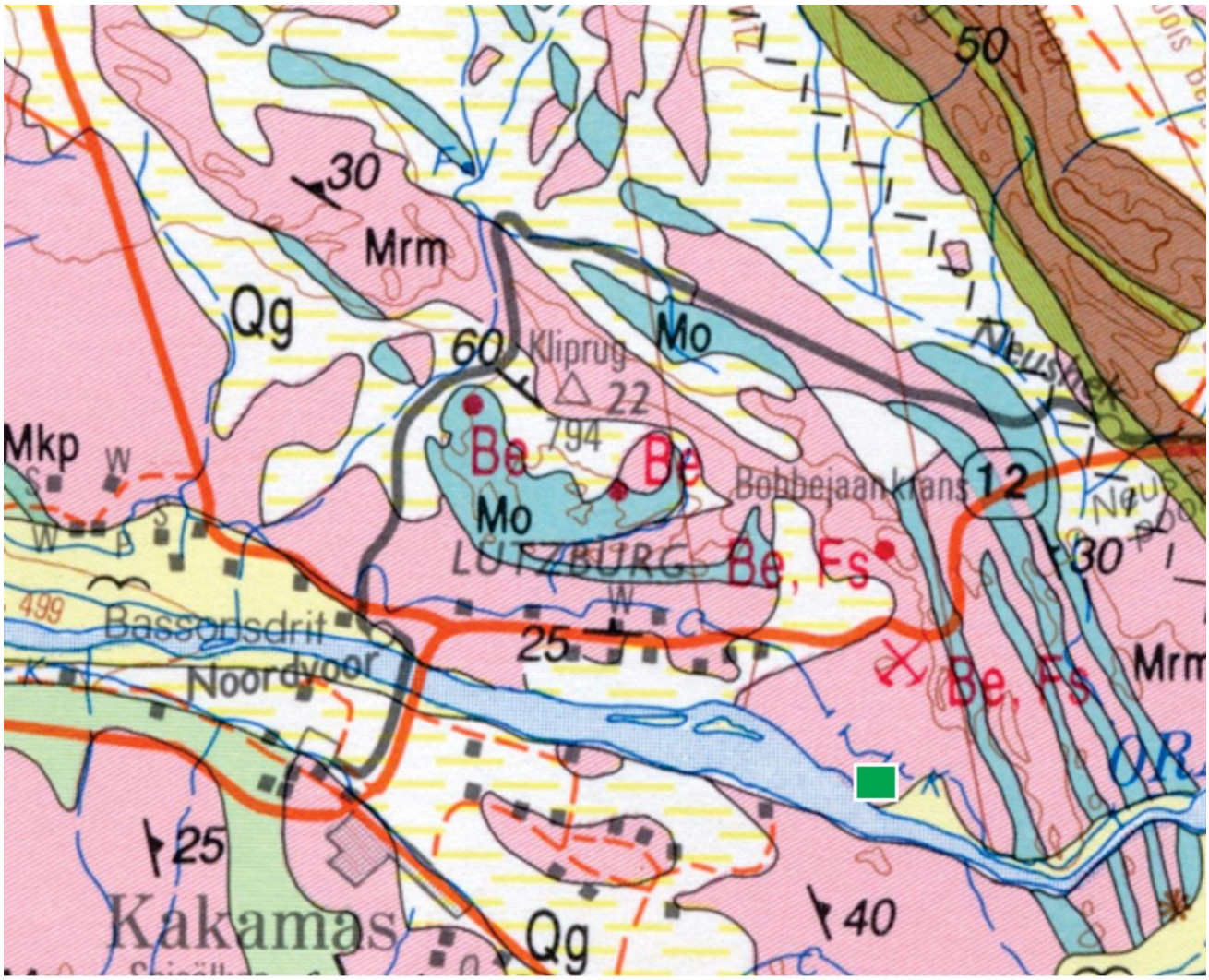

Figure 5. According to the 1 : 250 000 scale geological map of the area (2820 Upington, Council for Geoscience, Pretoria) the proposed development footprint (green square) is underlain by well-developed, superficial deposits (mostly red-brown aeolian sand) located on intrusive Makolian rocks of the Kakamas Terrane (pink weathering Riemvasmaak gneis, *Mrm*).

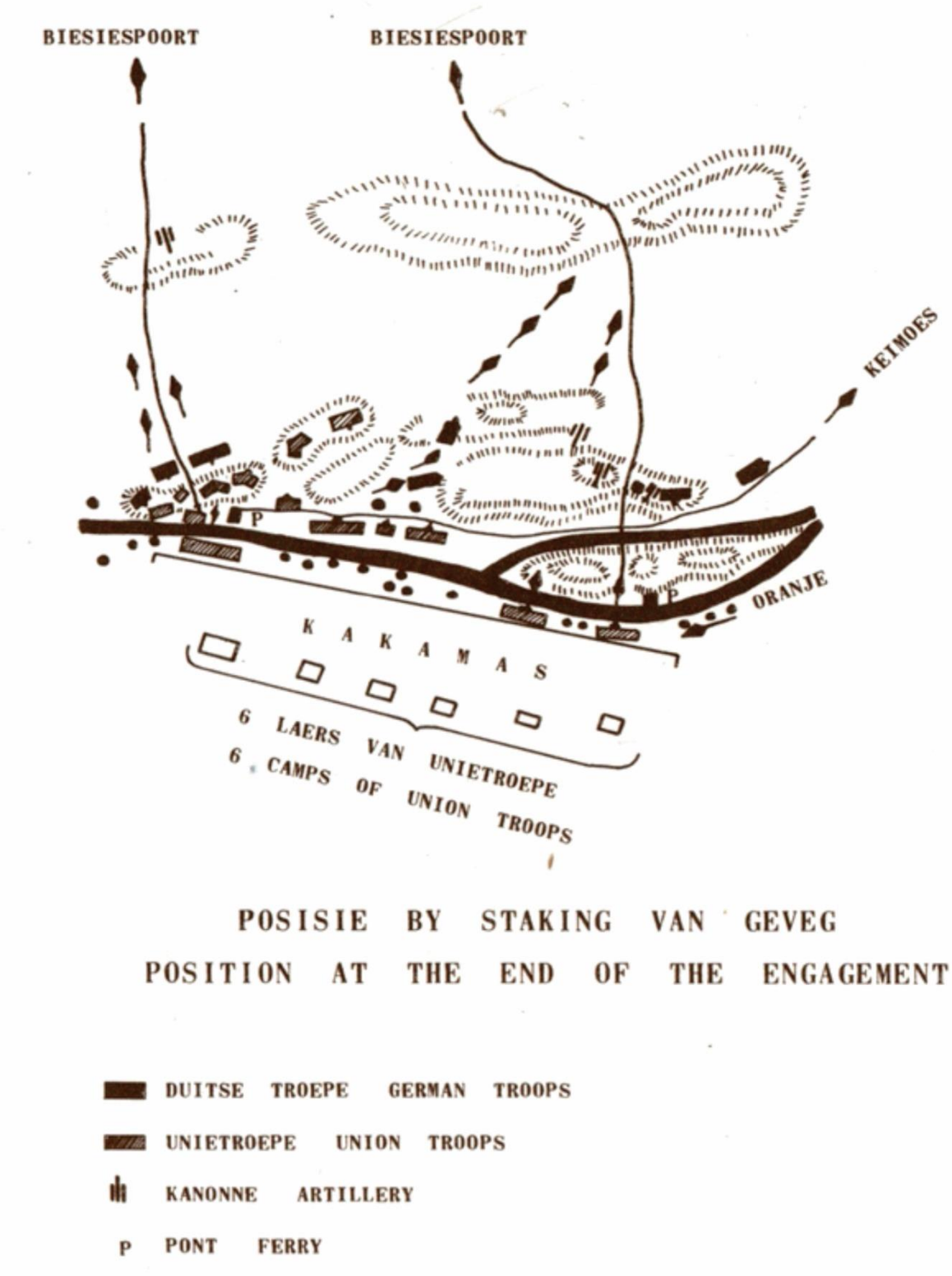

Figure 6. Battle of Kakamas, February 1915 (Oberholzer 1972).

APPENDIX D_2

Ecological Report

Report on the ecological assessment of the proposed development of a graveyard in Lutzburg, Northern Cape Province.

March 2021

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DECLARATION OF INDEPENDENCE

DPR Ecologists and Environmental Services is an independent company and has no financial, personal or other interest in the proposed project, apart from fair remuneration for work performed in the delivery of ecological services. There are no circumstances that compromise the objectivity of the study.

Report Version	**Final 1.0**		
Title	**Report on the ecological assessment of the proposed development of a graveyard in Lutzburg, Northern Cape Province.**		
Author	**DP van Rensburg (Pr.Sci.Nat)**		**Mar'21**

Executive Summary

The proposed graveyard development is situated on the Remainder of Erf 3 which is situated adjacent and to the east of the small settlement of Lutzburg located to the north of the Orange River (Map 1). The site is surrounded by natural areas although it is clear that the adjacent urban area causes significant disturbance of the environment. A network of dirt roads is one of the most significant impacts in the area. This will be the development of a new graveyard, with the current graveyard situated approximately 250 meters further to the east. The site itself is devoid of any watercourses although two ephemeral drainage lines occur to the east and west of the site.

As discussed, a large drainage line occurs to the east of the site and will remain unaffected by it, while a small drainage line borders it to the west and is therefore likely to still be affected by the development. It is quite degraded and although small, still function in terms of water transport and storm water management (Map 1 & 2). It will be excluded from the development footprint and will therefore not be directly affected by it, however, storm water and erosion caused by the site may still affect it. Adequate storm water management measures will therefore also be necessary in order to prevent erosion and also to manage the flow of surface runoff.

Despite the apparent uniformity and low species diversity, several specimens of the protected tree species *Vachellia erioloba* and one specimen of *Boscia albitrunca* occur on the site. These trees would also be beneficial for the landscaping of the graveyard and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them.

In conclusion, the site is considered to still be largely natural though significant disturbance is evident and decreases its condition somewhat. In addition, the vegetation type on the site, Kalahari Karroid Shrubland (NKb 5), is not currently under significant threat and does not contribute significantly toward the conservation value of the site (Map 1 & 2). Remnants of the threatened Lower Gariep Alluvial Vegetation (Aza 3) does occur to the south and east of the site though both mapping resources and the on-site survey confirm that it is absent from the site and as long as activities are confined to the site footprint, should therefore remain unaffected. The site does contain numerous specimens of the protected *Vachellia erioloba* as well as a single specimen of the protected *Boscia albitrunca*. They will be beneficial for the landscaping of the graveyard and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them. A large and significant drainage line occurs approximately 30 meters to the east of the site and should therefore remain unaffected (Map 1). A much smaller drainage line borders the site to the west and should therefore be excluded from the site and should not form part of the graveyard layout (Map 1). Although it is excluded from the site it will still be important to implement adequate storm water management measures in order to prevent erosion and also to manage the flow of surface runoff on the site.

The impact significance has been determined and it is clear that the impacts before mitigation will mostly be moderate. With adequate mitigation the majority of impacts can be lowered to low-moderate although the loss of the vegetation on the site cannot be significantly mitigated and would likely remain moderate.

Table of contents

Ecological assessment

1. INTRODUCTION

1.1 Background

Natural vegetation is an important component of ecosystems. Some of the vegetation units in a region can be more sensitive than others, usually as a result of a variety of environmental factors and species composition. These units are often associated with water bodies, water transferring bodies or moisture sinks. These systems are always connected to each other through a complex pattern. Degradation of a link in this larger system, e.g. tributary, pan, wetland, usually leads to the degradation of the larger system. Therefore, degradation of such a water related system should be prevented.

Though vegetation may seem to be uniform and low in diversity it may still contain species that are rare and endangered. The occurrence of such a species may render the development unviable. Should such a species be encountered the development should be moved to another location or cease altogether.

South Africa contains 19 known centres of endemism. These areas contain a high number of species endemic to this specific area. Due to the limited range of most of these species many are rare, protected or endangered. The proposed graveyard is situated on the eastern border of the Gariep Centre of Endemism. Many species occurring within this centre is unique and localised to this area. Development in such centres of endemism should be done with careful investigation of the biodiversity and species composition of the area. Areas with rare, endangered or endemic species and areas with a high biodiversity should be avoided when planning a development.

South Africa's water resources have become a major concern in recent times. As a water scarce country, we need to manage our water resources sustainably in order to maintain a viable resource for the community as well as to preserve the biodiversity of the system. Thus, it should be clear that we need to protect our water resources so that we may be able to utilise this renewable resource sustainably. Areas that are regarded as crucial to maintain healthy water resources include wetlands, streams as well as the overall catchment of a river system.

Development around cities and towns are necessary to accommodate an ever-growing population. Areas along the boundaries of cities and towns are usually in a degraded state due to the impact of the large population these areas house. Though this may be the case in most situations there may still be areas that consist of sensitive habitats such as watercourses, wetlands or rare vegetation types that need to be conserved. These areas may also contain endangered fauna and flora.

An ever-increasing population is accompanied by an ever-increasing fatality-rate. This necessitates the expansion or establishment of graveyards. These graveyards should be located in areas of low slope to prevent the erosion of graves and should also not occur near watercourses where graves may be exposed by floods.

The proposed graveyard development is situated on the Remainder of Erf 3 which is situated adjacent and to the east of the small settlement of Lutzburg located to the north of the Orange River (Map 1). The site is surrounded by natural areas although it is clear that the adjacent

urban area causes significant disturbance of the environment. A network of dirt roads is one of the most significant impacts in the area. This will be the development of a new graveyard, with the current graveyard situated approximately 250 meters further to the east. The site itself is devoid of any watercourses although two ephemeral drainage lines occur to the east and west of the site.

A site visit was conducted on 25 February 2021. The entire footprint of the graveyard site was surveyed. The site survey was conducted during summer and after significant rainfall and plant species identification and vegetation composition was considered optimal.

For the above reasons it is necessary to conduct an ecological assessment of an area proposed for development.

The report together with its recommendations and mitigation measures should be used to minimise the impact of the proposed development.

1.2 The value of biodiversity

The diversity of life forms and their interaction with each other and the environment has made Earth a uniquely habitable place for humans. Biodiversity sustains human livelihoods and life itself. Although our dependence on biodiversity has become less tangible and apparent, it remains critically important.

The balancing of atmospheric gases through photosynthesis and carbon sequestration is reliant on biodiversity, while an estimated 40% of the global economy is based on biological products and processes.

Biodiversity is the basis of innumerable environmental services that keep us and the natural environment alive. These services range from the provision of clean water and watershed services to the recycling of nutrients and pollution. These ecosystem services include:

- Soil formation and maintenance of soil fertility.
- Primary production through photosynthesis as the supportive foundation for all life.
- Provision of food, fuel and fibre.
- Provision of shelter and building materials.
- Regulation of water flows and the maintenance of water quality.
- Regulation and purification of atmospheric gases.
- Moderation of climate and weather.
- Detoxification and decomposition of wastes.
- Pollination of plants, including many crops.
- Control of pests and diseases.
- Maintenance of genetic resources.

2. SCOPE AND LIMITATIONS

- To evaluate the present state of the vegetation and ecological functioning of the area proposed for the construction of a graveyard.
- To identify possible negative impacts that could be caused by the proposed graveyard.

2.1 Vegetation

Aspects of the vegetation that will be assessed include:

- The vegetation types of the region with their relevance to the proposed site.
- The overall status of the vegetation on site.
- Species composition with the emphasis on dominant-, rare- and endangered species.

The amount of disturbance present on the site assessed according to:

- The amount of grazing impacts.
- Disturbance caused by human impacts.
- Other disturbances.

2.2 Fauna

Aspects of the fauna that will be assessed include:

- A basic survey of the fauna occurring in the region using visual observations of species as well as evidence of their occurrence in the region (burrows, excavations, animal tracks, etc.).
- The overall condition of the habitat.
- A list of species that may occur in the region (desktop study).

2.3 Limitations

Some geophytic or succulent species may have been overlooked due to a specific flowering time or cryptic nature.
Although a comprehensive survey of the site was done it is still likely that several species were overlooked.
Some animal species may not have been observed as a result of their nocturnal and/or shy habits.

3. METHODOLOGY

3.1 Several literature works were used for additional information.

Vegetation:
Red Data List (Raymondo *et al.* 2009)
Vegetation types (Mucina & Rutherford 2006)
Field guides used for species identification (Adams 1976, Bromilow 1995, 2010, Coates-Palgrave 2002, Court 2010, Fish *et al* 2015, Gibbs-Russell *et al* 1990, Le Roux 2005, Manning 2009, Roberts & Fourie 1975, Smith & Van Wyk 2003, Van Oudtshoorn 2004, Van Rooyen 2001, Van Rooyen & Van Rooyen 2019, Van Wyk & Malan 1998, Van Wyk & Van Wyk 1997).

Terrestrial fauna:
Field guides for species identification (Child *et al* 2016, Cillié 2018).

3.2 Survey

The site was assessed by means of transects and sample plots.

Noted species include rare and dominant species.
The broad vegetation types present on the sites were determined.
The state of the environment was assessed in terms of condition, grazing impacts, disturbance by humans, erosion and presence of invader and exotic species.

Animal species were also noted as well as the probability of other species occurring on or near the site according to their distribution areas and habitat requirements.
The state of the habitat was also assessed.

3.3 Criteria used to assess sites

Several criteria were used to assess the site and determine the overall status of the environment.

Vegetation characteristics
Characteristics of the vegetation in its current state. The diversity of species, sensitivity of habitats and importance of the ecology as a whole.

Habitat diversity and species richness: normally a function of locality, habitat diversity and climatic conditions.
Scoring: Wide variety of species occupying a variety of niches – 1, Variety of species occupying a single nich – 2, Single species dominance over a large area containing a low diversity of species – 3.

Presence of rare and endangered species: The actual occurrence or potential occurrence of rare or endangered species on a proposed site plays a large role on the feasibility of a development. Depending on the status and provincial conservation policy, presence of a Red Data species can potentially be a fatal flaw.
Scoring: Occurrence actual or highly likely – 1, Occurrence possible – 2, Occurrence highly unlikely – 3.

Ecological function: All plant communities play a role in the ecosystem. The ecological importance of all areas though, can vary significantly e.g. wetlands, drainage lines, ecotones, etc.
Scoring: Ecological function critical for greater system – 1, Ecological function of medium importance – 2, No special ecological function (system will not fail if absent) – 3.

Degree of rarity/conservation value:
Scoring: Very rare and/or in pristine condition – 1, Fair to good condition and/or relatively rare – 2, Not rare, degraded and/or poorly conserved – 3.

Vegetation condition
The sites are compared to a benchmark site in a good to excellent condition. Vegetation management practises (e.g. grazing regime, fire, management, etc.) can have a marked impact on the condition of the vegetation.

Percentage ground cover: Ground cover is under normal and natural conditions a function of climate and biophysical characteristics. Under poor grazing management, ground cover is one of the first signs of vegetation degradation.
Scoring: Good to excellent – 1, Fair – 2, Poor – 3.

Vegetation structure: This is the ratio between tree, shrub, sub-shrubs and grass layers. The ratio could be affected by grazing and browsing by animals.
Scoring: All layers still intact and showing specimens of all age classes – 1, Sub-shrubs and/or grass layers highly grazed while tree layer still fairly intact (bush partly opened up) – 2, Mono-layered structure often dominated by a few unpalatable species (presence of barren patches notable) – 3.

Infestation with exotic weeds and invader plants or encroachers:
Scoring: No or very slight infestation levels by weeds and invaders – 1, Medium infestation by one or more species – 2, Several weed and invader species present and high occurrence of one or more species – 3.

Degree of grazing/browsing impact:
Scoring: No or very slight notable signs of browsing and/or grazing – 1, Some browse lines evident, shrubs shows signs of browsing, grass layer grazed though still intact – 2, Clear browse line on trees, shrubs heavily pruned and grass layer almost absent – 3.

Signs of erosion: The formation of erosion scars can often give an indication of the severity and/or duration of vegetation degradation.
Scoring: No or very little signs of soil erosion – 1, Small erosion gullies present and/or evidence of slight sheet erosion – 2, Gully erosion well developed (medium to large dongas) and/or sheet erosion removed the topsoil over large areas – 3.

Faunal characteristics
Presence of rare and endangered species: The actual occurrence or potential occurrence of rare or endangered species on a proposed site plays a large role on the feasibility of a development. Depending on the status and provincial conservation policy, presence of a Red Data species or very unique and sensitive habitats can potentially be a fatal flaw.
Scoring: Occurrence actual or highly likely – 1, Occurrence possible – 2, Occurrence highly unlikely.

3.4 Biodiversity sensitivity rating (BSR)

The total scores for the criteria above were used to determine the biodiversity sensitivity ranking for the sites. On a scale of 0 – 30, six different classes are described to assess the suitability of the sites to be developed. The different classes are described in the table below:

Table 1: Biodiversity sensitivity ranking

BSR	BSR general floral description	Floral score equating to BSR class
Ideal (5)	Vegetation is totally transformed or in a highly degraded state, generally has a low level of species diversity, no species of concern and/or has a high level of invasive plants. The area has lost its inherent ecological function. The area has no conservation value and potential for successful rehabilitation is very low. The site is ideal for the proposed development.	29 – 30
Preferred (4)	Vegetation is in an advanced state of degradation, has a low level of species diversity, no species of concern and/or has a high level of invasive plants. The area's ecological function is seriously hampered, has a very low conservation value and the potential for successful rehabilitation is low. The area is preferred for the proposed development.	26 – 28
Acceptable (3)	Vegetation is notably degraded, has a medium level of species diversity although no species of concern are present. Invasive plants are present but are still controllable. The area's ecological function is still intact but may be hampered by the current levels of degradation. Successful rehabilitation of the area is possible. The conservation value is regarded as low. The area is acceptable for the proposed development.	21 – 25
Not preferred (2)	The area is in a good condition although signs of disturbance are present. Species diversity is high and species of concern may be present. The ecological function is intact and very little rehabilitation is needed. The area is of medium conservation importance. The area is not preferred for the proposed development.	11 – 20
Sensitive (1)	The vegetation is in a pristine or near pristine condition. Very little signs of disturbance other than those needed for successful management are present. The species diversity is very high with several species of concern known to be present. Ecological functioning is intact and the conservation importance is high. The area is regarded as sensitive and not suitable for the proposed development.	0 - 10

4. ECOLOGICAL OVERVIEW OF THE SITE

4.1 Overview of ecology and vegetation types (Mucina & Ruterford 2006)

Refer to the list of species encountered on the site in Appendix B.

According to Mucina & Rutherford (2006) the area consists of Lower Gariep Broken Veld (NKb 1) and Kalahari Karroid Shrubland (NKb 5). Both these vegetation types are currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004) (Map 1 & 2). Remnants of the Endangered (EN) Lower Gariep Alluvial Vegetation (Aza 3) which is associated with the floodplain of the Orange River occur to the south and east of the site but will remain unaffected as long as all activities are confined to the footprint of the site.

The Northern Cape Critical Biodiversity Areas Plan (2016) has recently been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The site in question is listed as being a Critical Biodiversity Area 2, as a result of the rocky, hill terrain which is well-known to contain a significantly higher species diversity than other habitats (Map 3). The site survey has however indicated that it is not situated within this rocky terrain (which would also be unsuitable for the digging of graves for graveyards). Consequently, this does not significantly increase the conservation value of the site.

The proposed graveyard development is situated on the Remainder of Erf 3 which is situated adjacent and to the east of the small settlement of Lutzburg located to the north of the Orange River (Map 1). The site is surrounded by natural areas although it is clear that the adjacent urban area causes significant disturbance of the environment. A network of dirt roads is one of the most significant impacts in the area. This will be the development of a new graveyard, with the current graveyard situated approximately 250 meters further to the east. The site itself is devoid of any watercourses although two ephemeral drainage lines occur to the east and west of the site.

The majority of the site still consists of natural vegetation but which has been degraded to some extent by the current land use (Map 1). Significant levels of littering is present as a result of the nearby urban area, but although unsightly does not cause significant modification of the vegetation. Several dirt roads cross the area and although not a high impact does cause significant, but local, transformation of the vegetation and promotes erosion and obstruction to flow patterns. The vegetation is dominated by scattered trees and shrubs, with a quite well-developed grass layer and herbaceous species also present.

The topography of the site is relatively uniform and is dominated by an alluvial plain. A small drainage line borders the site to the west which does increase habitat diversity somewhat but as long as it remains excluded from the site it should remain unaffected (Map 1). A significant drainage line also occurs to the east of the site (approximately 30 meters) and should therefore be unaffected by it. The site itself consists of a relatively flat area with a very slight slope from north to south, following the main direction of surface water flow. The site has an elevation of 673 m along the northern border which decreases to 670 m along the southern border and also indicates the slight slope.

As indicated, though the site itself contains no drainage lines or watercourses, two drainage lines occurs to the east and west of it (Map 1). These flow from north to south and forms a direct tributary of the Orange River, flowing into it approximately 1 km to the south of the site. They are both natural drainage lines, largely unmodified, although dirt track crossings do impact on their flow and flooding regimes. These drainage lines are relatively small and are only ephemeral in terms of flow regime, meaning that they will very rarely flow, but will discharge by means of flash floods after heavy rainfall events. The eastern drainage line is quite prominent with a clear and well-defined main channel, though being located approximately 30 meters from the proposed site border, it should remain unaffected. The small drainage line bordering the site to the west is very small and indistinct. It will however still function in terms of storm water flow and therefore still provides an important function. It will be excluded from the development footprint though care should still be taken that it and its functioning are not modified any further. Due to the storm water function of the drainage line it will also be subjected to erosion. Large rainfall events, although rare do sporadically occur and these would cause significant erosion. This should therefore be taken into consideration in the layout and placement of the graveyard. Adequate storm water management measures will therefore also be necessary in order to prevent erosion and also to manage the flow of surface runoff.

The immediate region is very arid and receives rainfall mainly in late summer/early autumn with a mean annual rainfall of 134 mm. Rainfall also varies considerably from year to year. The occurrence of wetland areas is therefore very low. The monthly maximum temperature varies from 20˚C in July to 33˚C in January. Frost occurs during winter but is not common with frost ranging from 10 to 30 days.

Geology in the study area consists of generally highly deformed metamorphosed sedimentary and volcanic rocks intruded by granitoids and the region is further characterised by numerous geological faults and shear zones. The area forms part of the Namaqua Metamorphic Province and within the Bushmanland Terrane. The soils of the area are red-yellow apedal soils, freely drained, of the Ag and Ae land types.

As mentioned, although the site still consists largely of natural vegetation, significant levels of disturbance was noted. The tree layer is represented mostly by scattered specimens of the protected *Vachellia erioloba* with the smaller tree/shrub, *Senegalia melifera* subsp. *detinens* also being abundant. The protected *V. erioloba* is a relatively widespread species but is still regarded as protected and therefore have a significant conservation value. These trees would also be beneficial for the landscaping of the graveyard and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them. Other shrubs common on the site include *Calobota spinescens, Rhigozum trichotomum* and *Cadaba aphylla*. A single specimen of the protected *Boscia albitrunca* (Shepherds Tree) was also noted. Although widespread, it is still regarded as protected and therefore has a significant conservation value. It would also be beneficial for the landscaping of the graveyard and should be retained if possible. Should this not be possible the necessary permits will also have to be obtained to remove it. The grass layer is dominated by *Schmidtia kalahariensis*, representing a relatively natural species assemblage. Other common growth forms include herbaceous species such as *Gisekia africana, Tribulus pterophorus, Indigofera auricana* and *Zygophyllum simplex* and dwarf karroid shrubs such as *Monechma genistifolium* subsp. *australe* and *Plinthus sericeus*. Underneath trees and shrubs, the succulent, *Kleinia longiflora* was also abundant. From the discussion of the vegetation on the site it is clear that the area is still largely natural though some level of disturbance is present.

The surrounding area contains remnants of Lower Gariep Alluvial Vegetation (Aza 3), an Endangered (EN) vegetation type under severe development pressure and therefore with a high conservation value (Map 1 & 2). Current mapping resources indicate the proposed site does not consist of this vegetation type and was also confirmed by the site survey. The vegetation type is associated with the banks of the Orange River, its floodplain but also the productive alluvial terraces being utilised for agriculture. The vegetation would therefore contain at least some riparian species such as *Acacia erioloba, Prosopis glandulosa, Lycium bosciifolium, Maerua gilgii* and *Stipagrostis namaquensis*. The vegetation type is also discernible as a significantly denser vegetation layer. Although such remnants were noted to the south and east of the site, it can be confirmed that the site itself does not consist of this vegetation type.

In conclusion, the site is considered to still be largely natural though significant disturbance is evident and decreases its condition somewhat. In addition, the vegetation type on the site, Kalahari Karroid Shrubland (NKb 5), is not currently under significant threat and does not contribute significantly toward the conservation value of the site (Map 2). Remnants of the threatened Lower Gariep Alluvial Vegetation (Aza 3) does occur to the south and east of the site though both mapping resources and the on-site survey confirm that it is absent from the site and as long as activities are confined to the site footprint, should therefore remain unaffected (Map 1 & 2). The site does contain numerous specimens of the protected *Vachellia erioloba* as well as a single specimen of the protected *Boscia albitrunca*. They will be beneficial for the landscaping of the graveyard and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them. A large and significant drainage line occurs approximately 30 meters to the east of the site and should therefore remain unaffected (Map 1). A much smaller drainage line borders the site to the west and should therefore be excluded from the site and should not form part of the graveyard layout (Map 1). Although it is excluded from the site it will still be important to implement adequate storm water management measures in order to prevent erosion and also to manage the flow of surface runoff on the site.

4.2 Overview of terrestrial fauna (actual & possible)

The site does not contain an abundance of tracks and signs of mammals although a few burrows of a small mammal was observed on the site. This is most likely of the Ground Squirrel (*Xerus inauris*) or Yellow Mongoose (*Cynictis penicillata*). Both are widespread species well adapted to peri-urban areas. The mammal population is also likely to be smaller than the natural conditions and rare and endangered species absent due to the proximity to urban areas and human activities on the site.

The proposed development will transform the majority of the vegetation on the site and thus also the available habitat to fauna. This will therefore decrease the available habitat and force mammals on the site into adjacent areas, putting pressure on the surrounding populations. The extent of the proposed development and the extensive natural areas to the north will however limit this impact to some extent.

In order to ensure no direct impact on the mammals on the sites the hunting, capturing or trapping of mammals on both should be strictly prohibited during construction and excavation.

List of some Red Data terrestrial mammals that could occur in the region (Child *et al* 2016):

Aardwolf	*Proteles cristatus*
Bat-Eared Fox	*Otocyon megalotis*
Striped Weasel	*Poecilogale albinucha*
Small Spotted Cat	*Felis negripes*
Antbear	*Orycteropus afer*

Though there is still a likelihood that some of these species may occur on the site this is considered relatively low owing to the proximity of urban areas and associated human activities.

5. ANTICIPATED IMPACTS

Anticipated impacts that the development will have is primarily concerned with the loss of habitat and species diversity but will also include impacts on the drainage lines around the site.

The vegetation on the site is still largely natural although significant disturbance was present. The site does not contain any unique habitats or significant species diversity. Furthermore, the vegetation types on the site, Lower Gariep Broken Veld (NKb 1) and Kalahari Karroid Shrubland (NKb 5), are both listed as being of Least Concern (LC) and do not significantly contribute towards its conservation value (Map 1 & 2). Although the Northern Cape Critical Biodiversity Areas Plan (2016) indicate that the site is regarded as a Critical Biodiversity Area 2 (CBA 2) due the presence of rocky outcrops, the site survey indicated that these are not present on the site but do occur immediately to the north of it (Map 3). As a combination of the above, the loss of the vegetation on the site will not exceed a moderate impact. The small extent of the proposed development will also decrease the anticipated impact.

Despite the apparent uniformity and low species diversity, several specimens of the protected tree species *Vachellia erioloba* and one specimen of *Boscia albitrunca* occur on the site. Although they are relatively widespread species they are still regarded as protected and their loss would therefore entail a significant impact. Adequate mitigation should however decrease this impact significantly. These trees would also be beneficial for the landscaping of the graveyard and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them.

As discussed, a large drainage line occurs to the east of the site and will remain unaffected by it, while a small drainage line borders it to the west and is therefore likely to still be affected by the development. It is quite degraded and although small, still function in terms of water transport and storm water management (Map 1 & 2). It will be excluded from the development footprint and will therefore not be directly affected by it, however, storm water and erosion caused by the site may still affect it. Large rainfall events, although rare, do sporadically occur and these would cause significant erosion. Adequate storm water management measures will therefore also be necessary in order to prevent erosion and also to manage the flow of surface runoff. Furthermore, all surrounding drainage lines should be regarded as no-go areas and no construction activities including placing materials or waste within these systems should be allowed. Though the western drainage line does not form part of the development footprint, the runoff and disturbance caused by the development may still have a moderate impact on it. Implementation of adequate storm water measures and prevention of erosion will further decrease this impact. It is also recommended that comments be obtained from the Department of Water and Sanitation (DWS) and the need to apply for authorisation be determined.

As was observed the site is still largely natural and without a high amount of exotic species. However, specimens of the highly invasive *Prosopis glandulosa* was observed in the surroundings and can become highly problematic. This is a serious invader in the Northern Cape and especially along watercourses. They should be removed where observed and not utilised in the landscaping of the graveyard. Monitoring of weed establishment and eradication should form a prominent part of management of the proposed graveyard. Where category 1 and 2 weeds occur, they require removal by the property owner according to the Conservation of Agricultural Resources Act, No. 43 of 1983 and National Environmental Management: Biodiversity Act, No. 10 of 2004.

The proposed development will transform the majority of the vegetation on the site and thus also the available habitat to fauna. This will therefore decrease the available habitat and force mammals on the site into adjacent areas, putting pressure on the surrounding populations. The extent of the proposed development and the extensive natural areas to the north will however limit this impact to some extent. In order to ensure no direct impact on the mammals on the sites the hunting, capturing or trapping of mammals on both should be strictly prohibited during construction and excavation.

The impact significance has been determined and it is clear that the impacts before mitigation will mostly be moderate. With adequate mitigation the majority of impacts can be lowered to low-moderate although the loss of the vegetation on the site cannot be significantly mitigated and would likely remain moderate.

Please refer to Appendix C for the impact methodology.

Significance of the impact:

Impact	Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Before Mitigation								
Loss of vegetation type and clearing of vegetation	3	5	1	3	5	4	4.5	13.5
Loss of protected species	3	5	1	3	5	4	4.5	13.5
Impact on watercourses	3	5	2	3.3	3	4	3.5	11.5
Infestation with weeds and invaders	3	4	2	3	4	3	3.5	10.5
Impact on Terrestrial fauna	3	5	1	3	3	2	2.5	7.5
After Mitigation								
Loss of vegetation type and clearing of vegetation	3	5	1	3	5	4	4.5	13.5
Loss of protected species	3	5	1	3	3	2	2.5	7.5
Impact on watercourses	2	5	1	2.6	3	3	3	7.8
Infestation with weeds and invaders	2	3	1	2	3	2	2.5	5
Impact on Terrestrial fauna	3	5	1	3	3	2	2.5	7.5

6. SITE SPECIFIC RESULTS

Habitat diversity and species richness:

Habitat diversity is relatively low and is dominated by a sandy plain. The small drainage line bordering the site to the west does contribute somewhat toward habitat diversity (Map 1). Species diversity is regarded as relatively low despite recent rainfall.

Presence of rare and endangered species:

Despite the apparent uniformity and low species diversity, several specimens of the protected tree species *Vachellia erioloba* and *Boscia albitrunca* occur on the site. Although they are relatively widespread species they are still regarded as protected species and still retain a significant conservation value. Adequate mitigation, as recommended, will have to be implemented in order to decrease the impact on them.

Ecological function:

The ecological function of the site is still largely intact with a moderate level of modification. The site functions as habitat for fauna, sustains a specific vegetation type, i.e. Lower Gariep Broken Veld (NKb 1) and Kalahari Karroid Shrubland (NKb 5) and also functions as part of the catchment of the bordering drainage line (Map 1 & 2). From the survey it is clear that the site still supports natural vegetation though degraded to some extent. The habitat to fauna will therefore also be modified to some degree. In addition, the proximity of the urban area will also significantly decrease the size and composition of the faunal population significantly. Although the small drainage line to the west does not form part of the site, it is still likely to be affected by it. It provides an important function in terms of water transportation and storm water management. Adequate storm water management measures will therefore also be necessary in order to prevent erosion and also to manage the flow of surface runoff. Furthermore, all surrounding drainage lines should be regarded as no-go areas and no construction activities including placing materials or waste within these systems should be allowed.

Degree of rarity/conservation value:

The vegetation on the site is still largely natural although some disturbance is evident. The site does not contain any unique habitats or significant species diversity. Furthermore, the vegetation types on the site, Lower Gariep Broken Veld (NKb 1) and Kalahari Karroid Shrubland (NKb 5), are both listed as being of Least Concern (LC) and do not significantly contribute towards its conservation value (Map 1 & 2). Although the Northern Cape Critical Biodiversity Areas Plan (2016) indicate that the site is regarded as a Critical Biodiversity Area 2 (CBA 2) due the presence of rocky outcrops, the site survey indicated that these are not present on the site but do occur immediately to the north of it (Map 3).

The drainage line bordering the site to the west, although small, still function in terms of water transport and storm water management (Map 1). It must therefore be considered as still having a relatively high conservation value.

The site contains several specimens of the protected tree species, *Vachellia erioloba* and *Boscia albitrunca* which, although relatively widespread, still retain a significant conservation value.

Overall the site is therefore considered to have a moderate conservation value.

Percentage ground cover:

The percentage vegetation cover is low. This is natural to this arid region but has been decreased somewhat as a result of overgrazing by domestic stock as well as clearing by dirt tracks.

Vegetation structure:

The vegetation structure is considered as largely natural without any significant modification. This includes scattered trees and shrubs, a sparse grass, dwarf karroid shrub and herbaceous components.

Infestation with exotic weeds and invader plants:

No extensive infestations of exotic species occur. However, a few specimens of *Prosopis glandulosa* occur in the surroundings and are considered a serious invader in the Northern Cape and especially along watercourses and where they are observed on and around the site, they should be removed and not utilised in the landscaping of the graveyard.

Degree of grazing/browsing impact:

The site is currently utilised as communal grazing for domestic stock and therefore has a relatively high degree of overgrazing and -browsing.

Signs of erosion:

No prominent erosion was noted although some erosion within the surrounding drainage lines are considered to reach moderate levels.

Terrestrial animals:

The site does not contain an abundance of tracks and signs of mammals although a burrow colony of a small mammal was observed on the site. This is most likely of the Ground Squirrel (*Xerus inauris*) or Yellow Mongoose (*Cynictis penicillata*). Both are widespread species well adapted to peri-urban areas. The mammal population is also likely to be smaller than the natural conditions and rare and endangered species absent due to the proximity to urban areas and human activities on the site. Though there is still a likelihood that some protected or Red Listed species may occur on the site this is considered relatively low owing to the proximity of urban areas and associated human activities.

Table 2: Biodiversity Sensitivity Rating for the proposed graveyard.

	Low (3)	Medium (2)	High (1)
Vegetation characteristics			
Habitat diversity & Species richness	3		
Presence of rare and endangered species		2	
Ecological function		2	
Uniqueness/conservation value		2	
Vegetation condition			
Percentage ground cover		2	
Vegetation structure			1
Infestation with exotic weeds and invader plants or encroachers		2	
Degree of grazing/browsing impact	3		
Signs of erosion		2	
Terrestrial animal characteristics			
Presence of rare and endangered species	3		
Sub total	9	12	1
Total		22	

7. BIODIVERSITY SENSITIVITY RATING (BSR) INTERPRETATION

Table 3: Interpretation of Biodiversity Sensitivity Rating.

Site	Score	Site Preference Rating	Value
Lutzburg Graveyard	22	Acceptable	3

8. DISCUSSION AND CONCLUSION

The proposed construction of the Lutzburg graveyard has been rated as being acceptable for the development. This is mostly as a result of the uniform habitat, low species diversity and low conservation value of the vegetation type. However, elements of conservation significance still occur and will require adequate mitigation, i.e. protected trees and bordering drainage line.

According to Mucina & Rutherford (2006) the area consists of Lower Gariep Broken Veld (NKb 1) and Kalahari Karroid Shrubland (NKb 5). Both these vegetation types are currently listed as being of Least Concern (LC) under the National List of Threatened Ecosystems (Notice 1477 of 2009) (National Environmental Management Biodiversity Act, 2004) (Map 1 & 2). Remnants of the Endangered (EN) Lower Gariep Alluvial Vegetation (Aza 3) which is associated with the floodplain of the Orange River occur to the south and east of the site but will remain unaffected as long as all activities are confined to the footprint of the site.

The Northern Cape Critical Biodiversity Areas Plan (2016) has recently been published and has identified areas which are essential to meeting conservation targets for specific vegetation types, i.e. Critical Biodiversity Areas. The site in question is listed as being a Critical Biodiversity Area 2, as a result of the rocky, hill terrain which is well-known to contain a significantly higher species diversity than other habitats (Map 3). The site survey has however indicated that it is not situated within this rocky terrain (which would also be unsuitable for the digging of graves for graveyards). Consequently, this does not significantly increase the conservation value of the site.

The proposed graveyard development is situated on the Remainder of Erf 3 which is situated adjacent and to the east of the small settlement of Lutzburg located to the north of the Orange River (Map 1). The site is surrounded by natural areas although it is clear that the adjacent urban area causes significant disturbance of the environment. A network of dirt roads is one of the most significant impacts in the area. This will be the development of a new graveyard, with the current graveyard situated approximately 250 meters further to the east. The site itself is devoid of any watercourses although two ephemeral drainage lines occur to the east and west of the site.

The majority of the site still consists of natural vegetation but which has been degraded to some extent by the current land use (Map 1). Significant levels of littering is present as a result of the nearby urban area, but although unsightly does not cause significant modification of the vegetation. Several dirt roads cross the area and although not a high impact does cause significant, but local, transformation of the vegetation and promotes erosion and obstruction to flow patterns. The vegetation is dominated by scattered trees and shrubs, with a quite well-developed grass layer and herbaceous species also present.

As discussed, a large drainage line occurs to the east of the site and will remain unaffected by it, while a small drainage line borders it to the west and is therefore likely to still be affected by the development. It is quite degraded and although small, still function in terms of water transport and storm water management (Map 1 & 2). It will be excluded from the development footprint and will therefore not be directly affected by it, however, storm water and erosion caused by the site may still affect it. Large rainfall events, although rare, do sporadically occur and these would cause significant erosion. Adequate storm water management measures will therefore also be necessary in order to prevent erosion and also to manage the flow of surface runoff. Furthermore, all surrounding drainage lines should be regarded as no-go areas and no

construction activities including placing materials or waste within these systems should be allowed. Though the western drainage line does not form part of the development footprint, the runoff and disturbance caused by the development may still have a moderate impact on it. Implementation of adequate storm water measures and prevention of erosion will further decrease this impact. It is also recommended that comments be obtained from the Department of Water and Sanitation (DWS) and the need to apply for authorisation be determined.

The vegetation on the site is still largely natural although significant disturbance was present. The site does not contain any unique habitats or significant species diversity. Furthermore, the vegetation types on the site, Lower Gariep Broken Veld (NKb 1) and Kalahari Karroid Shrubland (NKb 5), are both listed as being of Least Concern (LC) and do not significantly contribute towards its conservation value (Map 1 & 2). Although the Northern Cape Critical Biodiversity Areas Plan (2016) indicate that the site is regarded as a Critical Biodiversity Area 2 (CBA 2) due the presence of rocky outcrops, the site survey indicated that these are not present on the site but do occur immediately to the north of it (Map 3). As a combination of the above, the loss of the vegetation on the site will not exceed a moderate impact. The small extent of the proposed development will also decrease the anticipated impact.

Despite the apparent uniformity and low species diversity, several specimens of the protected tree species *Vachellia erioloba* and one specimen of *Boscia albitrunca* occur on the site. Although they are relatively widespread species they are still regarded as protected and their loss would therefore entail a significant impact. Adequate mitigation should however decrease this impact significantly. These trees would also be beneficial for the landscaping of the graveyard and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them.

As was observed the site is still largely natural and without a high amount of exotic species. However, specimens of the highly invasive *Prosopis glandulosa* was observed in the surroundings and can become highly problematic. This is a serious invader in the Northern Cape and especially along watercourses. They should be removed where observed and not utilised in the landscaping of the graveyard. Monitoring of weed establishment and eradication should form a prominent part of management of the proposed graveyard. Where category 1 and 2 weeds occur, they require removal by the property owner according to the Conservation of Agricultural Resources Act, No. 43 of 1983 and National Environmental Management: Biodiversity Act, No. 10 of 2004.

In conclusion, the site is considered to still be largely natural though significant disturbance is evident and decreases its condition somewhat. In addition, the vegetation type on the site, Kalahari Karroid Shrubland (NKb 5), is not currently under significant threat and does not contribute significantly toward the conservation value of the site (Map 1 & 2). Remnants of the threatened Lower Gariep Alluvial Vegetation (Aza 3) does occur to the south and east of the site though both mapping resources and the on-site survey confirm that it is absent from the site and as long as activities are confined to the site footprint, should therefore remain unaffected. The site does contain numerous specimens of the protected *Vachellia erioloba* as well as a single specimen of the protected *Boscia albitrunca*. They will be beneficial for the landscaping of the graveyard and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them. A large and significant drainage line occurs approximately 30 meters to the east of the site and should therefore remain unaffected (Map 1). A much smaller drainage line borders the site to the west and should therefore be excluded from the site and should not form part of the graveyard layout

(Map 1). Although it is excluded from the site it will still be important to implement adequate storm water management measures in order to prevent erosion and also to manage the flow of surface runoff on the site.

The impact significance has been determined and it is clear that the impacts before mitigation will mostly be moderate. With adequate mitigation the majority of impacts can be lowered to low-moderate although the loss of the vegetation on the site cannot be significantly mitigated and would likely remain moderate.

9. RECOMMENDATIONS

- The hunting, capturing or trapping of mammals on the site should be strictly prohibited during construction and excavation.

- After construction has ceased all construction waste should be removed from the area.

- Adequate monitoring of weed establishment and their continued eradication must be maintained. This is particularly applicable to the seriously invasive *Prosopis glandulosa*.

- Construction and all activities associated with it should be confined to the development footprint and should not encroach into adjacent areas.

- Mitigation should be implemented to limit the impact on the protected species occurring on the site:

    - The protected tree species on the site, *Vachellia erioloba* and *Boscia albitrunca,* will be beneficial for the landscaping of the graveyard and they should be retained on the site. Should this not be possible the necessary permits will also have to be obtained to remove them.

- The small drainage line bordering the site to west the should be excluded from the graveyard layout and adequate mitigation implemented to minimise the impact on it (Map 1):

    - The drainage line bordering the site to the west as well as the larger drainage line to the east (approximately 30 meters) should be regarded as no-go areas and no construction activities including placing materials or waste within these systems should be allowed
    - An adequate storm water management system should be implemented which should prevent sediment wash into the bordering drainage line, should prevent the formation of erosion as well as polluted surface water (should any be generated on the site) from entering this drainage line.
    - Comments should be obtained from the Department of Water and Sanitation (DWS) and the need to apply for authorisation be determined

- Monitoring of construction including weed establishment and erosion should take place.

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Annexure A: Maps and Site photos

Locality map for the proposed construction of a graveyard in Lutzburg, Northern Cape Province.

Preparred for:
MDA Environmental Consultants
9 Barnes Street
Westdene
9301

Legend:

- Watercourses
- Approximate site location
- Property boundaries
- Wetland areas
- Threatened Ecosystems

Map Information

Spheroid: WGS 84

Quantum GIS

Scale: 1:5 000

DPR Ecologists
Contact Darius van Rensburg at:
darius@dprecologists.co.za
P.O. Box 12726, Brandhof, 9324
Tel: 083 410 0770

Map 1: Locality map of the proposed construction of a graveyard in Lutzburg, Northern Cape Province. Note that the site does not fall within the Lower Gariep Alluvial vegetation type, a Threatened Ecosystem. Note also extensive transformation of the surroundings due to agriculture. The small drainage line bordering the site to the west and larger drainage line to the east are also indicated. The urban area of Lutzburg is visible to the west of the site.

General ecology map for the construction of a graveyard in Lutzburg, Northern Cape Province.

Preparred for:
MDA Environmental Consultants
9 Barnes Street
Westdene
9301

Legend:

- Watercourses
- Approximate site location
- Property boundaries
- Wetland areas
- Lower Gariep Alluvial Veg
- Lower Gariep Broken Veld
- Kalahari Karroid Shrubland

Map Information

Spheroid: WGS 84

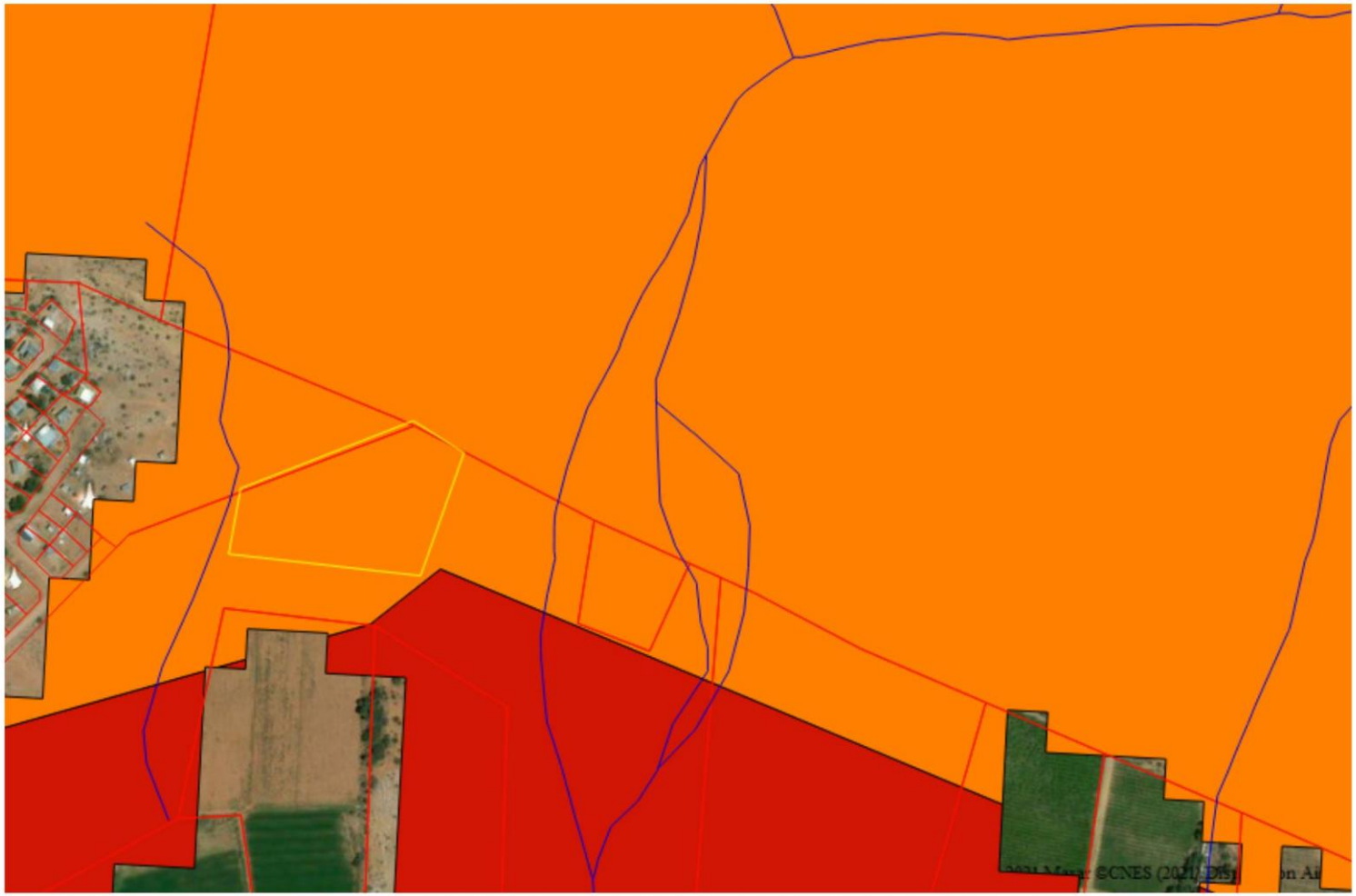
Quantum GIS

Scale: 1:5 000

DPR Ecologists
Contact Darius van Rensburg at:
darius@dprecologists.co.za
P.O. Box 12726, Brandhof, 9324
Tel: 083 410 0770

Map 2: General ecology map of the proposed construction of a graveyard in Lutzburg, Northern Cape Province. Note that the proposed graveyard avoids the Lower Gariep Alluvial (Aza 3) vegetation type, which is regarded as a Threatened Ecosystem. The small drainage line bordering the site to the west and larger drainage line to the east are also indicated.

Northern Cape Critical Biodiversity Areas map for the proposed construction of a graveyard in Lutzburg, Northern Cape Province.



Preparred for:
MDA Environmental Consultants
9 Barnes Street
Westdene
9301

Legend:

- Watercourses
- Approximate site location
- Property boundaries
- Wetland areas
- Critical Biodiversity Area 1
- Critical Biodiversity Area 2
- Ecological Support Area
- Other Natural Areas

Map Information

Spheroid: WGS 84

Quantum GIS

Scale: 1:5 000

DPR Ecologists
Contact Darius van Rensburg at:
darius@dprecologists.co.za
P.O. Box 12726, Brandhof, 9324
Tel: 083 410 0770

Map 3: Critical Biodiversity Areas map of the proposed construction of a graveyard in Lutzburg, Northern Cape Province. The site falls within a Critical Biodiversity Area 2 as a result of the higher diversity associated with rocky terrain and hills. These were however confirmed by the site survey to absent from the site.

Figure 1: Panorama of the proposed graveyard site. The site is clearly dominated by a sparse tree layer with well-developed grass layer and herbaceous component.

Figure 2: Another panorama of the site with notable vegetation clearing also visible. Note also rocky ridges in the background which confirms that such habitats are absent from the site.

Figure 3: View of the small drainage line bordering the site to the west. It is notably small but as a storm water channel, impacts on it should still be prevented.

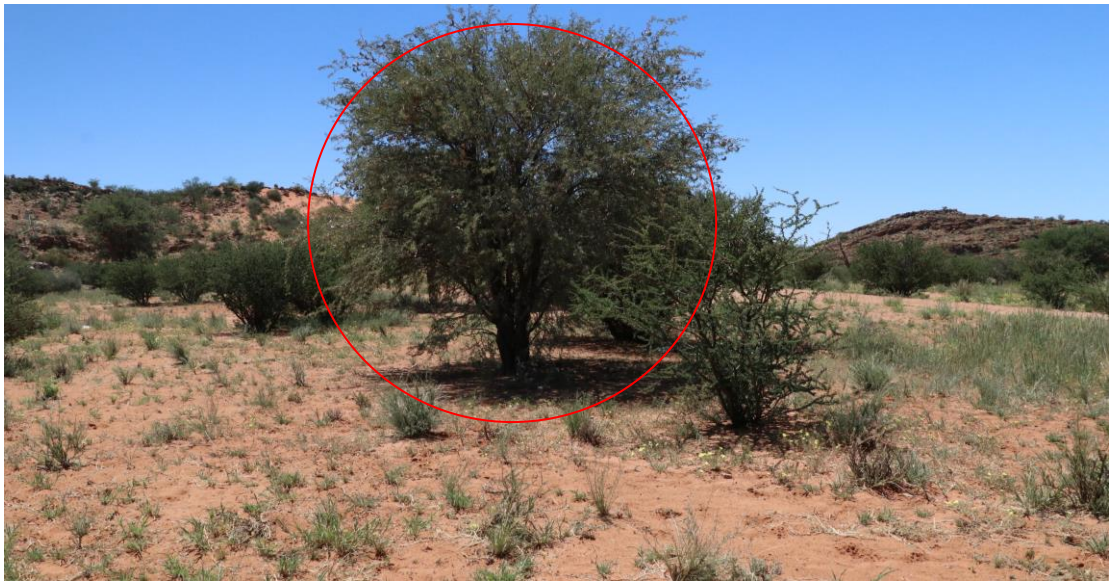


Figure 4: View of the site with one of the protected specimens of *Vachellia erioloba* (Camel Thorn Tree) visible. Several of these trees are present on the site.

Figure 5: Only one specimen of the protected *Boscia albitrunca* (Shepherds Tree) could be identified on the site.

Figure 6: Several dirt tracks cause disturbance of the vegetation. Note also the uran area of Lutzburg in the background.

Figure 7: The drainage line to the east of the site is visibly quite large though as it is located more than 30 meters from the site should not be affected by the development.

Figure 8: Patches of the threatened Lower Gariep Alluvial Vegetation in the surrounding area is characterised by a denser tree/shrub cover and a few riparian species.

Figure 9: One of the burrows on the site belonging to either the Ground Squirrel (*Xerus inauris*) or Yellow Mongoose (*Cynictis penicillata*).

Appendix B: Species list

Species indicated with an * are exotic.

Protected species are coloured orange and Red Listed species red.

Graveyard Expansion

Species	Growth form
**Prosopis glandulosa*	Tree
Aizoon asbestinum	Dwarf karroid shrub
Boscia albitrunca	Tree
Cadaba aphylla	Shrub
Calobota spinescens	Shrub
Citrillus lanatus	Creeper
Gisekia africana	Herb
Indigofera auricana	Herb
Kleinia longiflora	Succulent
Monechma genistifolium subsp. *australe*	Dwarf karroid shrub
Plinthus sericeus	Dwarf karroid shrub
Rhigozum trichotomum	Shrub
Schmidtia kalahariensis	Grass
Senegalia mellifera subsp. *detinens*	Tree/shrub
Stipagrostis uniplumis	Grass
Tribulus pterophorus	Herb
Vachellia erioloba	Tree
Zygophyllum simplex	Herb

Appendix C: Impact methodology

The environmental significance assessment methodology is based on the following determination:
Environmental Significance = Overall Consequence x Overall Likelihood

Determination of Consequence

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: **Severity/Intensity, Duration and Extent/Spatial Scale.** Each factor is assigned a rating of 1 to 5, as described below and in tables 6, 7, 9 and 10.

Determination of Severity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.
Table 7 will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 7: Rating of severity

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%
Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant / Harmful	Great / Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance / Easily reversible	Low cost to mitigate	Substantial cost to mitigate / Potential to mitigate impacts / Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate / Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration
Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 8: Rating of Duration

Rating	Description
1: Low	Almost never / almost impossible
2: Low-Medium	Very seldom / highly unlikely
3: Medium	Infrequent / unlikely / seldom
4: Medium-High	Often / regularly / likely / possible
5: High	Daily / highly likely / definitely

Determination of Extent/Spatial Scale
Extent refer to the spatial influence of an impact be local (extending only as far as the activity, or will be limited to the site and its immediate surroundings), regional (will have an impact on the region), national (will have an impact on a national scale) or international (impact across international borders).

Table 9: Rating of Extent / Spatial Scale

Rating	Description
1: Low	Immediate, fully contained area
2: Low-Medium	Surrounding area
3: Medium	Within Business Unit area of responsibility
4: Medium-High	Within Mining Boundary area
5: High	Regional, National, International

Determination of Overall Consequence
Overall consequence is determined by adding the factors determined above and summarised below, and then dividing the sum by 4.

Table 10: Example of calculating Overall Consequence

Consequence	Rating
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	10
TOTAL CONSEQUENCE:(Subtotal divided by 4)	3.3

Likelihood
The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in Table 11 and Table 12.

Determination of Frequency
Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 11: Rating of frequency

Rating	Description
1: Low	Once a year or once/more during operation/LOM
2: Low-Medium	Once/more in 6 Months
3: Medium	Once/more a Month
4: Medium-High	Once/more a Week
5: High	Daily

Determination of Probability
Probability refers to how often the activity/even or aspect has an impact on the environment.

Table 12: Rating of probability

Rating	Description
1: Low	Almost never / almost impossible
2: Low-Medium	Very seldom / highly unlikely
3: Medium	Infrequent / unlikely / seldom
4: Medium-High	Often / regularly / likely / possible
5: High	Daily / highly likely / definitely

Overall Likelihood
Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Table 13: Example of calculating the overall likelihood

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	6
TOTAL LIKELIHOOD (Subtotal divided by 2)	3

Determination of Overall Environmental Significance
The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of LOW, LOW-MEDIUM, MEDIUM, MEDIUM, MEDIUM-HIGH or HIGH, as shown in the table below.

Table 14: Determination of overall environmental significance

Significance or Risk	Low	Low-Moderate	Moderate	Moderate-High	High
Overall Consequence X Overall Likelihood	1 - 4.9	5 - 9.9	10 - 14.9	15 – 19.9	20 - 25

Qualitative description or magnitude of Environmental Significance
This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision making process associated with this event, aspect or impact.

Table 15: Description of the environmental significance and the related action required.

Significance	Low	Low-Moderate	Moderate	Moderate-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to the company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

APPENDIX D_3

Geotechnical Report

LUTZBURG

PROPOSED NEW CEMETERY

REPORT ON

STORM WATER DRAINAGE &
GEOTECHNICAL CONDITIONS

PREPARED FOR:

Kai !Garib Municipality
Private Bag X6
Kakamas
8870

Telephone 054 – 461 6400
Fax No 054 - 516 9066
Email moengwilhelmina@gmail.com

PREPARED BY:

Stabilis Development (Pty) Ltd
P.O. Box 861
Kimberley
8300

053 – 833 1654
053 – 831 3786
info@stabilis.co.za

JUNE 2021

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1. BACKGROUND

Kai !Garib Municipality appointed Stabilis Development (Pty) Ltd to conduct a feasibility study for the development of a new a cemetery for the town of Lutzburg.

The feasibility study is funded by Kai !Garib Municipality and also includes the subdivision and rezoning and the required EIA requirements of the portions of land required for a new cemetery. The site was identified for the development of a cemetery to cater for the needs of the community of Lutzburg within walking distance from the residential area of the town.

This site identified for the new proposed cemetery is located on land, remainder of Holding 261, Kakamas North Settlement Agricultural Holdings that belongs to the Verenigde Gerformeerde Kerk in Suid Afrika. The Consistory of Verenigde Gereformeerde Kerk in Suider Afrika, Kakamas Congregation, gave permission to Kai !Garib Municipality to proceed with the process of a feasibility study for the development of a proposed new cemetery on this property. If a permit is issued for the development of a new cemetery on this property, the Municipality will engage with the land owner in the necessary negotiations to acquire approximately 1,2 Ha on the property for the development of a cemetery – See Letter of Consent attached as Annexure A.

An application for the funding of the capital costs involved for the development of the proposed new cemetery will be lodged at the Department of Corporate Governance, Human Settlements and Traditional Affairs, COGHSTA, on the MIG program.

2. INTRODUCTION

The town of Lutzburg is located approximately 15Km from Kakamas, the main centre of Kai !Garib Municipality. Kakamas is located approximately 80 Kilometres to the south west of Upington, the main centre of ZF Mgcawu District Municipality.

The existing cemetery at Lutzburg currently in use is situated in the town of Lutzburg within walking distance from the local community.

The existing cemetery is also approximately 99% full and reaching its capacity. Therefore a new cemetery is urgently required to meet the needs of the Lutzburg Community.

The proposed position of the site on the property for the development of the new cemetery is indicated on the attached Locality Plan - See Annexure B.

This report addresses the storm water drainage, external and internal, and the geotechnical conditions at the portion of land identified for the new proposed cemetery at Lutzburg.

3. GENERAL INFORMATION

The portion of land identified for the development of the prosed new cemetery is located on the property of the Verenigde Gereformeerde Kerk in Suider-Afrika and the site is

approximately 1,2Ha.The locality of the proposed site for the new cemetery is indicated on the attached Map as Annexure B

The legal owner of the land, the Verenigde Gereformeerde Kerk in Suidelike Afrika granted permission to Kai !Garib Municipality to conduct all studies and investigations required for the application to the Department of Nature Conservation for a permit to develop the proposed site as a cemetery. Kai !Garib Municipality will engage in further negotiations with the property owner to finalize the arrangements for the development of a cemetery on the proposed site on the property.

Water will be supplied from the existing water networks in the town of Lutzburg and a new gravel access road, that link the new cemetery with the existing road network in the town.

On-site sanitation will be provided by means of a conservancy tank that will serviced by the Municipality and the cemetery site be fenced off with a proper stock proof fence of at least 1,2m high.

4. STORM WATER AND GEOTECHNICAL

The prevailing storm water and geotechnical conditions at the site identified for the development of a new at the town of Lutzburg are described in the following paragraphs.

4.1 Storm Water Drainage

4.1.1 Climatic Conditions

The mean annual rainfall in this area is approximately 169 mm per year according to the rainfall statistics of the weather station, station number 0317/447AX, at Upinton.

This area falls within the summer rainfall region of South Africa with approximately 80% of the annual rainfall that occurs normally from January to April. Thunderstorms are typical of the rainfall pattern in this area.

4.1.2 Catchment Characteristics

The percentage run-off in this area is expected to be relatively high due to the scarce vegetation and the semi-permeable soil.

Normally the run-off from rain storms is concentrated in natural storm water drains or channels that flow down to the Orange River.

The existing natural storm water channels located to the east and west of the site is in operation and forms the natural drains for the external storm water runoff from the catchment located to south of the proposed cemetery site.

4.1.3 Suitability of Site

The identified site is suitable for the development of new cemeteries as far as the external storm water drainage is concerned. The natural storm water channel adjacent to the existing site can be utilised to drain the run-off from external storm water.

The new identified site is situated on a higher level than the existing natural storm water drainage lines and flooding of the proposed new cemetery is not likely to occur.
The natural gradient of the land is approximately 3.5% from south to east.

The drainage of the internal storm water will be addressed at the design and the development of the new proposed cemetery. An earth embankment can be constructed on the sides of the proposed cemetery if necessary to prevent storm water from flowing into the cemetery and to drain any run-off that originates from the surrounding land.

4.2 Geotechnical

4.2.1 General Geological Information

The local geology of the site is briefly described below.

The proposed site is situated on the intrusive Riemvasmaak Gneiss associated with the Gordonia Subprovince. Although the Riemvasmaak Gneiss appears highly weathered, it has a tendency to form large exfoliation domes.

Alluvium deposits are found in the lower laying areas that border the Orange River. These fine-grained silt sediments were deposited by slow moving, silt laden water.

Although the Riemvasmaak Gneiss appears highly weathered, it has a tendency to form large exfoliation domes.

Alluvium deposits are found in the lower laying areas that border the Orange River. These fine-grained silt sediments were deposited by slow moving, silt laden water.

4.2.1 Site Conditions

To establish the properties of the in-situ soil conditions on the site, three trial holes were made at the proposed site by means of a TLB excavator from Elohim Erets Retailers cc, a civil engineering contractor – see Annexure C, trial holes positions indicated on attached drawing SK3525.

The TLB is a relative small construction plant with limited excavation capacity.

Three trial holes, numbers 1, 2 and 3 were excavated to establish the typical in-situ soil profiles on this site- see Annexure C

- Trial hole 1 was excavated up to a depth of approximately 1,90 meter below natural ground level without any difficulty. The upper 150 mm was identified as sandy red soil and the next 1 750 mm in the profile firm, stiff red soil. The excavated test hole indicated stable soil conditions with mainly stiff red sandy soil.

- Trial hole 2 was excavated to a depth of 1,80 mm below natural ground level without any difficulty. The upper 100 mm was identified as sandy red soil mixed with organic material and the next 1 700 mm in the profile firm, stiff red soil
-

- Trial hole 3 was excavated to a depth of 1,80 mm below natural ground level without any difficulty. The upper 100 mm was identified as sandy red soil mixed with organic material and the next 1 700 mm in the profile firm, stiff red soil

  No intermediate material of hard rock was encountered in the trial hole profiles. Provision must be made for the possible presence of intermediate and hard rock in the tender documents of not more than 20% and 10% respectively.

  The profiles of this trial holes is shown in Annexure C.

4.2.3 Suitability of Sites

As far as the geotechnical conditions are concerned, the site is regarded suitable for the development of a new cemetery, but it is recommended that the graves be pre-excavated to the required depth of 1,8 meter.

The pre-excavation of the graves are normally done where hard materials are encountered and the cost thereof is then part of the development costs of the cemetery.

5. REMARKS AND RECOMMENDATIONS

The following remarks recommendations regarding the storm water and geotechnical conditions are relevant;

5.1 Storm Water Drainage

The identified sites can be regarded as suitable for the development of a cemetery as far as the external and internal storm water drainage is concerned.

It is recommended that a small earth embankment or berm, of approximately 300mm in height, be constructed on the eastern side of the site of the exiting cemetery to prevent external storm water flowing onto the site from the adjacent natural storm channel.

The internal storm water drainage can be accommodated by shaping the roads on the site.

5.2 Geotechnical Conditions

The trial holes excavated on the sites indicated that no intermediate and hard rock material may be encountered at depths up to 1,80m below natural ground level. Provision must be made for the possibility of intermediate or hard rock material during the design and tender stage of the physical development stage of the cemetery because the possibility of these type of excavations can occur on the site.

6. REFERENCES

- TUCANA SOLUTIONS, GEOHDROLOGICAL REPORT, KAKAMAS CEMETERY EXTENTION, 29 March 2019
- TUCANA SOLUTIONS, GEOHYDROLOGICAL REPORT, KAKAMAS PROPOSED NEW CEMETERY, 29 March 20149.

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C.J Botha Pr.Eng
Stabilis Development (Pty) Ltd

ANNEXURE A

LETTER OF CONSENT

Munisipaliteit Kai !Garib Municipality

Munisipale Gebou
11de Laan
Tel 054 461 6700
Faks 054 461 6401
E-Pos: mm@kaigarib.gov.za
Privaatsak X 6
KAKAMAS
8870
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11th Avenue
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Fax 086 516 9066
E-Mail: mm@kaigarib.gov.za
Private Bag X 6
KAKAMAS
8870
VAT Reg No. 4170193371

KAI !GARIB

IGA de Waal
Handel met hierdie saak

29 Januarie 2020

Consent / Resolution Letter – Remainder of Holding 261
To whom it may concern

It is hereby certified that:

1. The Consistory of the Verenigende Gereformeerde Kerk in Suider-Afrika, Kakamas Congregation is the legal owner of the remainder of Holding 261, Kakamas North Settlement Agricultural Holdings.
2. MAURITZ WILFRED CLAUDÉ ABELS, with the following ID number 590729 5152 087, is given permission by the Consistory of the Verenigende Gereformeerde Kerk in Suider-Afrika, Kakamas Congregation to sign any documentation regarding the proposed application for a cemetery to be submitted to the Northern Cape Department of Environment and Nature Conservation (NC DENC) as well as the Department of Water and Sanitation (DWS).
3. Kai !Garib Local Municipality is also given permission to undertake any study on the above mentioned property as required by NC DENC and DWS in this regard, with all costs to Kai !Garib Local Municipality.
4. Permission is not hereby automatically given to the Kai !Garib Local Municipality to construct a cemetery on the above mentioned property. However, it is hereby confirmed that I, as the landowner, will be willing to discuss compensation / registration of a servitude / other arrangement with Kai !Garib Local Municipality in this regard.

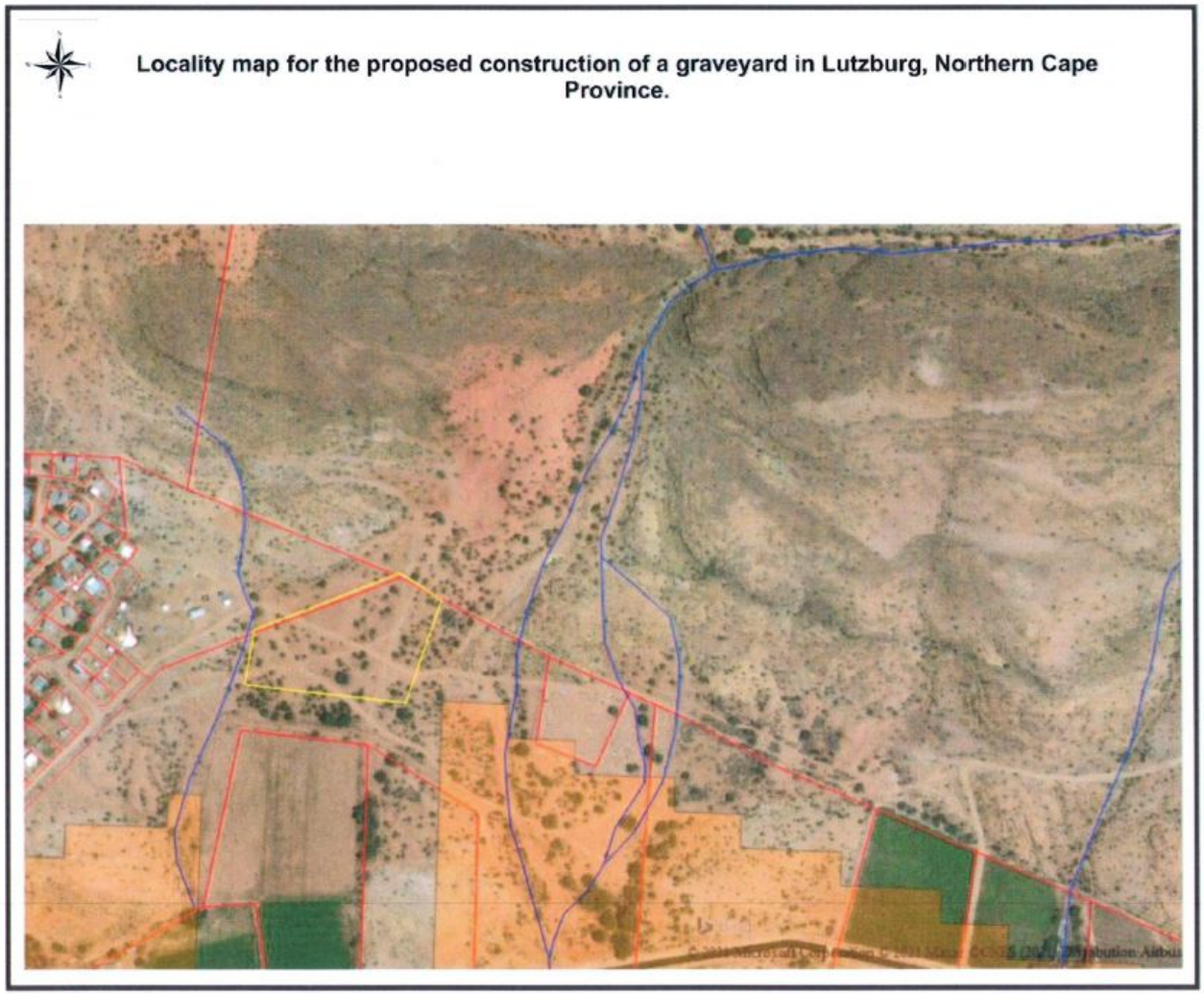
Signed on 12th day of February 2020 in Kakamas.

Signed by the landowner: Abels

Contact information of the landowner:
Cell: 071 713 6998 / 083 395 1891
Postal Address: P O Box 14, KAKAMAS, 8870
E-mail: kakamasvgk@gmail.com
Street Address: c/o Sinclair & Church Street, Langverwacht, KAKAMAS, 8870

ANNEXURE B

LOCALITY PLAN

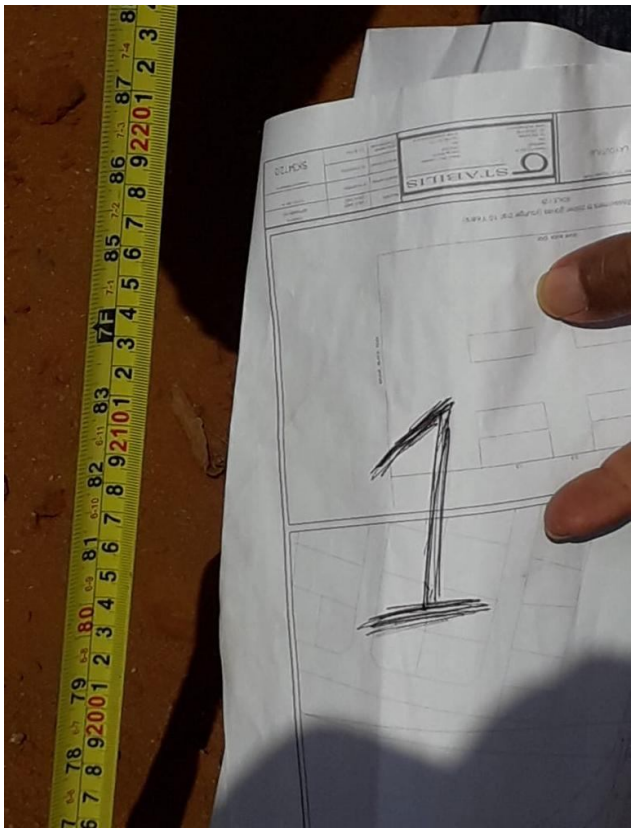


Map 1: Locality map of the proposed construction of a graveyard in Lutzburg, Northern Cape Province. Note that the site does not fall within the Lower Gariep Alluvial vegetation type, a Threatened Ecosystem. Note also extensive transformation of the surroundings due to agriculture. The small drainage line bordering the site to the west and larger drainage line to the east are also indicated. The urban area of Lutzburg is visible to the west of the site.

ANNEXURE C

TRIAL HOLE PROFILES

TRIAL HOLE 1



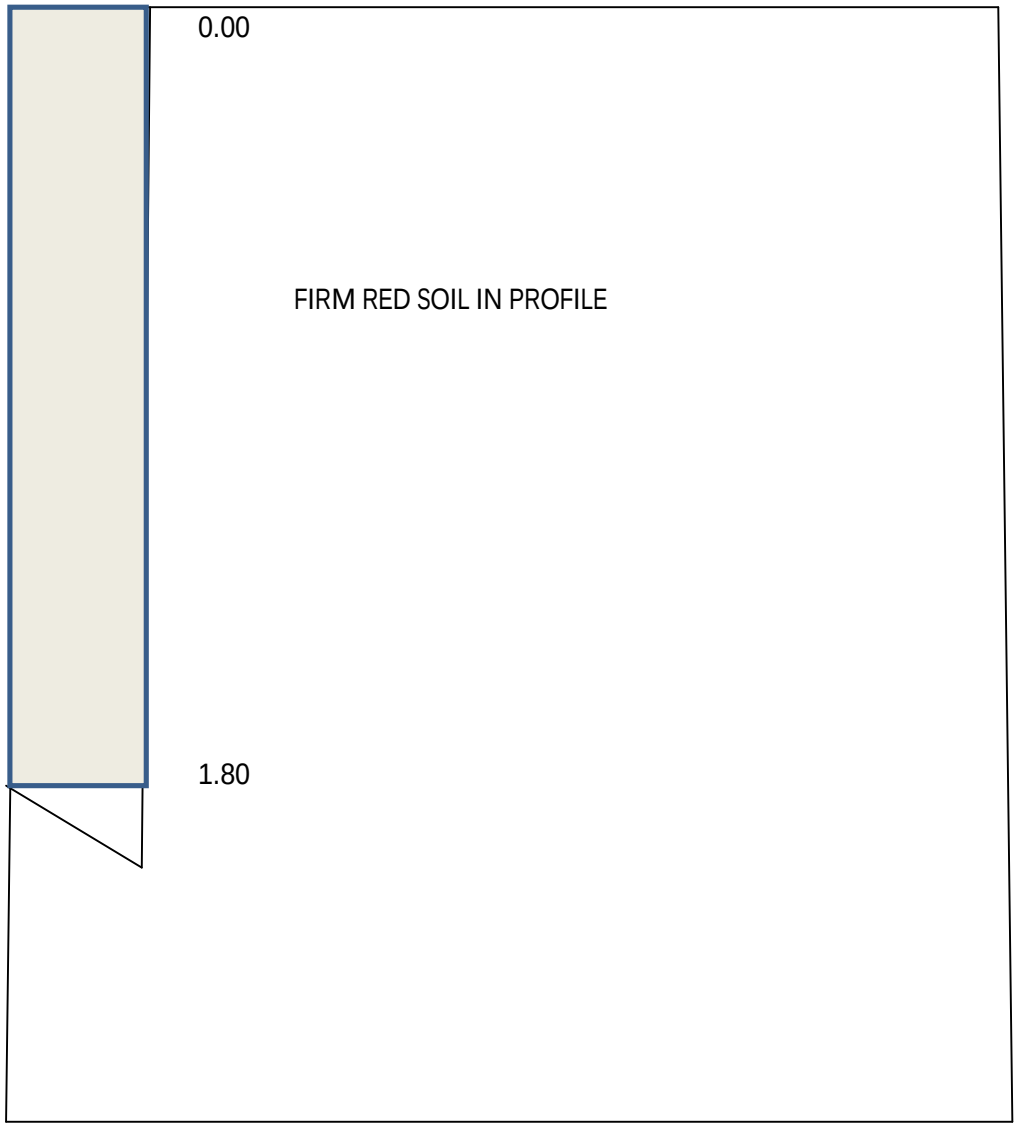
TRIAL HOLE 2

TRIAL HOLE 3

KAI !GARIB MUNICIPALITY

PROPOSED CEMETERY FOR LUTZBURG

TYPICAL PROFILE OF TRIAL HOLES



DATE: JUNE 2021

PROJECT NUMBER: SK 3525

STABILIS
Development(Pty)Ltd
Reg. 1999/039565/07
P.O.Box 861
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APPENDIX D4

Geohydrological Report

Geohydrological Report:

Proposed Cemetery - Lutzburg

By: C. Vermaak (Pr.Sci.Nat)

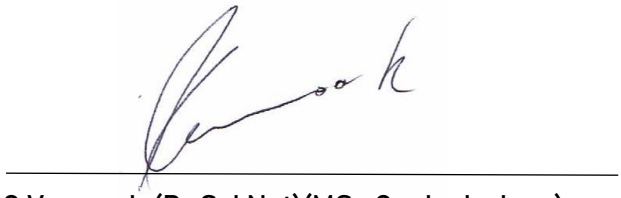
GEOHYDROLOGICAL REPORT

FOR

PROPOSED NEW CEMETERY – LUTZBURG

VER 1.0

Prepared By:



C.Vermaak (Pr.Sci.Nat)(MSc.Geohydrology)

From: Tucana Solutions
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9338
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Date: 2021-11-09

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GLOSSARY GEOHYDROLOGICAL TERMS AND ACRONYMS

Term	Definition
Aquiclude	An aquiclude is an impermeable geological unit that does not transmit water at all. Dense unfractured igneous or metamorphic rocks are typical aquiclude.
Aquitard	An aquitard is a geological unit that is permeable enough to transmit water in significant quantities when viewed over large and long periods, but its permeability is not sufficient to justify production boreholes being placed in it. Clays, loams and shales are typical aquitards.
Aquifer	An Underground body of permeable rock which can contain or transmit groundwater
Borehole Census	A field survey by which all relevant information regarding groundwater is gathered. This typically includes yields, borehole equipment, groundwater levels, casing height/diameter, co-ordinates, potential pollution risks, photos etc.
Confined Aquifer	A confined aquifer is bounded above and below by an aquiclude. In a confined aquifer, the pressure of the water is usually higher than that of the atmosphere, so that if a borehole taps the aquifer, the water in it stands above the top of the aquifer, or even above the ground surface. We then often speak of a free-flowing or artesian borehole.
Diffusivity (KD/S)	The hydraulic diffusitivity is the ratio of the transmissivity and the storativity of a saturated aquifer. It governs the propagation of chances a hydraulic head in the aquifer. Diffusivity has the dimension of Lenght^2/Time
Hydraulic Conductivity (K)	The hydraulic conductivity is the constant of proportionality in Darcy's Law. It is defined as the volume of water that will move through a porous medium in a unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow.
Leaky Aquifer	A leaky aquifer or semi-confined aquifer, is an aquifer whose upper and lower boundaries is aquitards, or one boundary is an aquitard and the other is an aquiclude. Water is free to move

	through the aquitards, either upwards or downwards. If a leaky aquifer is in hydrological equilibrium, the water level in a borehole tapping it may coincide with the water table.
Porosity	The porosity of a rock is its property of containing pores or voids. With consolidated rocks and hard rocks, a distinction is made between primary porosity, which is present when the rock is formed and secondary porosity, which develops later as a result of solution or fracturing.
Specific Yield (S_y)	The specific yield is the volume of water that an unconfined aquifer releases from storage per unit surface area or aquifer per unit decline of the water table. The values of the specific yield range from 0.01 to 0.3 and are much higher that the storativities of confined aquifers.
Storativity (S)	The storativity of a saturated confined aquifer of thickness D is the volume of water released from storage per unit surface area of the aquifer per unit decline in the component of hydraulic head normal to that surface.
Storativity Ratio	The storativity ratio is a parameter that controls the flow from the aquifer matrix blocks into the fractures of a confined fractured aquifer of the double-porosity type.
Susceptibility	A qualitative measure of the relative ease with which a groundwater body can be potentially be contaminated by anthropogenic activities.
Sustainable Yield	The yield calculated from aquifer test pumping by a professional geohydrologist. The yield refers to the recommended abstraction rate and pumping schedule for continues use.
Transmissivity (KD or T)	Transmissivity is the product of the average hydraulic conductivity K and the saturated thickness of the aquifer D. Consequently, transmissivity is the rate of flow under a unit hydraulic gradient through a cross section of unit width over the whole saturated thickness of the aquifer. Transmissivity is the product of the average hydraulic conductivity K and the saturated thickness of the aquifer D. Consequently, transmissivity is the rate of flow under a unit hydraulic gradient through a cross section of unit width over the whole saturated thickness of the aquifer

Unconfined Aquifer	An unconfined aquifer, also known as a water table aquifer, is bounded below by an aquiclude, but is not restricted by any confining layer above it. Its upper boundary is the water table and is free to rise and fall.
Recharge	Groundwater recharge or deep drainage or deep percolation is a hydrologic process where water moves downward from surface water to groundwater. This process usually occurs in the vadose zone below plant roots and is often expressed as a flux to the water table surface. Recharge occurs both naturally and anthropologically, where rainwater and or reclaimed water is routed to the subsurface.
Vulnerability	The likelihood for contamination to reach a specified position in a groundwater system after introduction at some location above the uppermost aquifer.

GEOLOGICAL TERMS Argillaceous rock	A type of sedimentary rock that contains a substantial amount of clay or clay-like compounds
Fault (Brittle Shear)	A planar fracture or discontinuity in a volume of rock, across which there has been significant displacement along the fractures as a result of earth movement
Intrusive rock	Rock that formed due to the cooling of magma that forced its way into fractures and cavities of other rock types without reaching the surface. (usually large crystal sizes)
Metasedimentary Rock	A sedimentary rock that appears to have been altered by metamorphism.
Migmatization	The process whereby a rock undergoes partial melting during extreme metamorphism, producing migmatite.
Sedimentary rock	A type of rock that formed by sedimentation material on the earth surface or in water bodies
Shear Zone	A shear zone is a structural discontinuity surface in the Earth's crust and upper mantle which forms as a response to inhomogeneous deformation partitioning strain into planar or curviplanar high-strain zones.

1 INTRODUCTION

Tucana Solutions was appointed by ***MDA*** to perform a geohydrological investigation for the proposed cemetery in Lutzburg.

The objectives of the study are as follows:

- Desk study and site visit to establish a conceptual model of the area.
- Borehole census of boreholes within a 1km radius to determine the potential utilization of existing boreholes as well as the current use.
- Satellite image interpretation and geophysical survey to improve the conceptual model of the area.
- A hydro census which includes collecting the following information: borehole coordinates, water levels, purpose of borehole, abstraction volumes and borehole depth.
- Perform a aquifer yield test on the borehole.
- A description of the aquifer by means of the available information
- Conceptualization of the geohydrology on site
- Preliminary Impact assessment of the proposed development on the geohydrological setting.
- Compile Geohydrological Report

2 LIMITATIONS

The full scope of a geohydrological assessment will include the compilation of a flow or mass transport model. Due to the initial lack of geohydrological information, a preliminary study was undertaken to determine the availability of boreholes to be tested in order to determine the aquifer parameters for the compilation and calibration of the model. The statements, opinions, and conclusions contained in this report are based solely upon the services rendered by ***Tucana Solutions*** as described in this report, the scope of work as established for the report, and in accordance with our proposal. In performing these services and preparing the report, ***Tucana Solutions*** relied upon the information provided by others, including public agencies, whose information is not guaranteed by ***Tucana Solutions***. No indications were found during our investigations that information contained in this report as provided to ***Tucana Solutions***, was false.

This report is based on conditions encountered and the information reviewed at the time of the site investigations. ***Tucana Solutions*** disclaims responsibility for any changes that may have occurred after this time or any error in the analytical results received from the laboratory. This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

3 GEOGRAPHICAL SETTING

3.1 TOPOGRAPHY AND DRAINAGE

The study area that is located east of Lutzburg in the Siyanda District Municipality in the Northern Cape is covering an area of approximately 1.64 ha. In Figure 1, these changes in elevation are shown with an added surface water drainage direction. The average hight of the property is 670 mamsl. Since groundwater flow tends to mimic surface drainage direction, groundwater is expected to flow through the study area from a dominantly north-western to a south-eastern direction as indicated by the blue arrows.

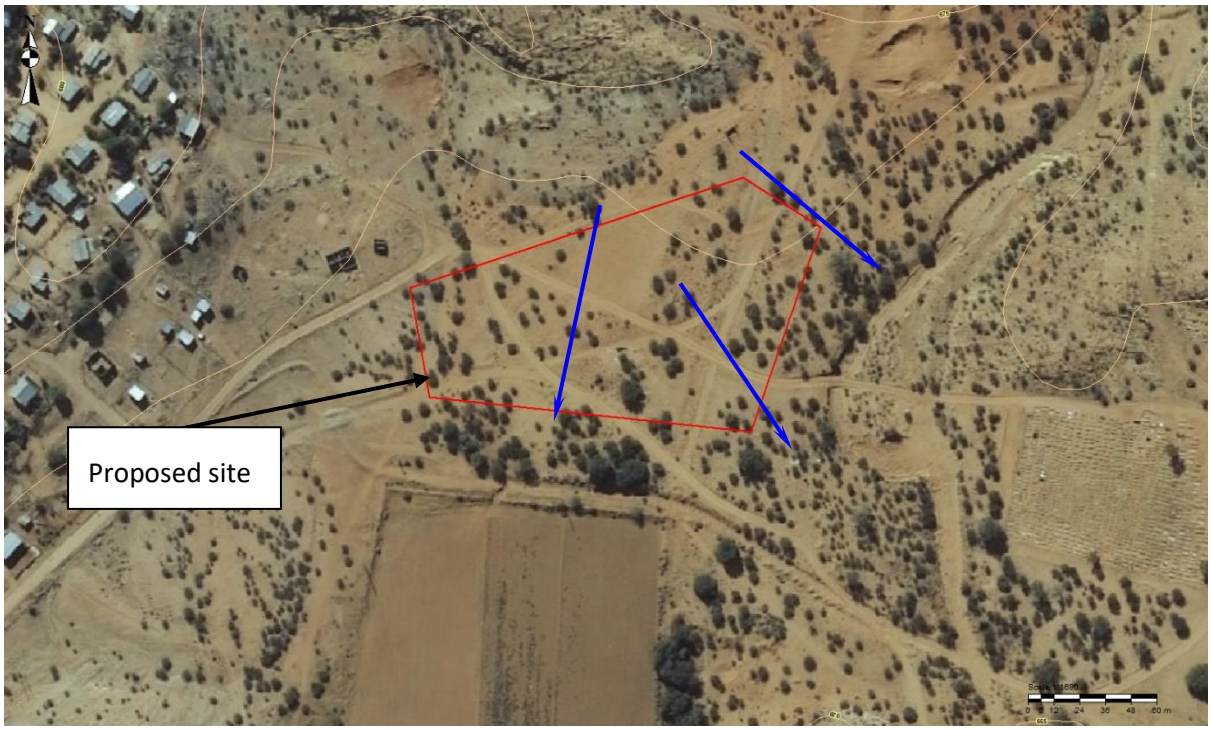


Figure 1: Topographical map

The project site is located in the D73F quaternary catchment. In general, the water will drain in a southern direction towards the lower laying areas in the southeast. The drainage directions are indicated in blue, on the map above.

Catchment	D73F
Area (km²)	4629.6
Mean annual runoff (mm/a)	2
Percentage no flow (%)	60
Percentage recharge (%)	0.08

Table 1: Information concerning quaternary catchments

3.2 CLIMATE

Lutzburg normally receives about 89mm of rain per year, with most rainfall occurring mainly during mid-summer. The chart below shows the average rainfall values for Thaba Nchu per month. It receives the lowest rainfall (1mm) in August and the highest (21mm) in February.

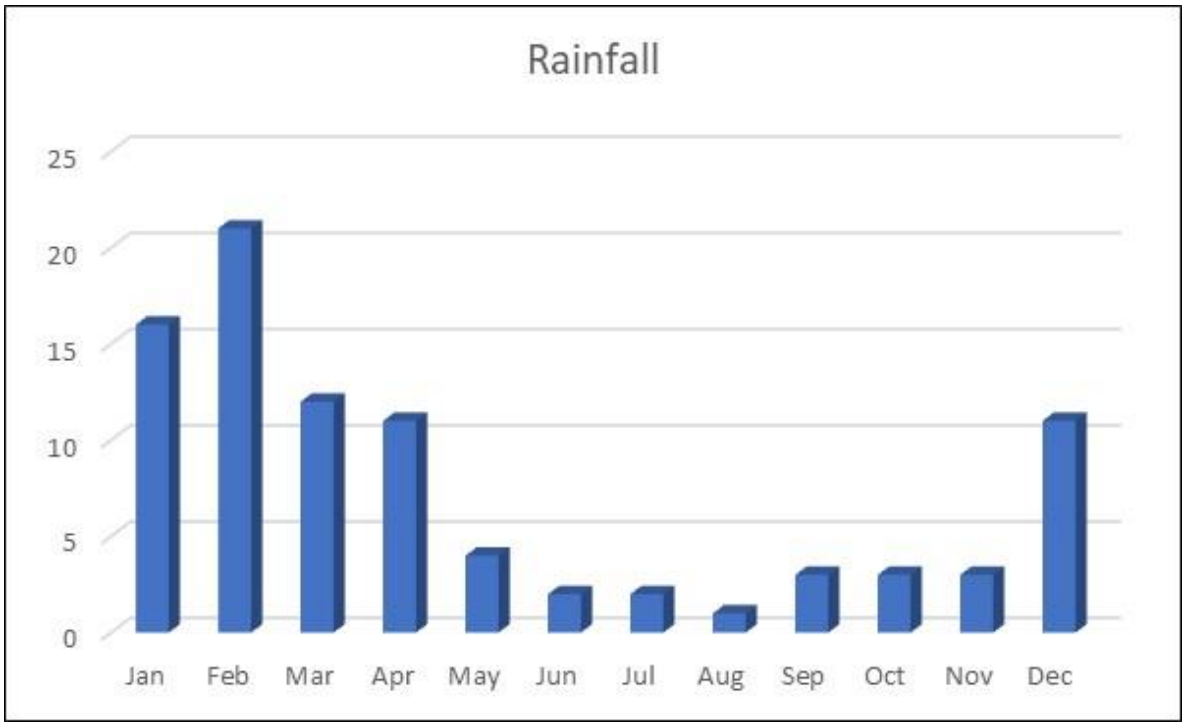


Figure 2: Average Monthly Rainfall

The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Lutzburg range from 19.7°C in June to 35°C in January.

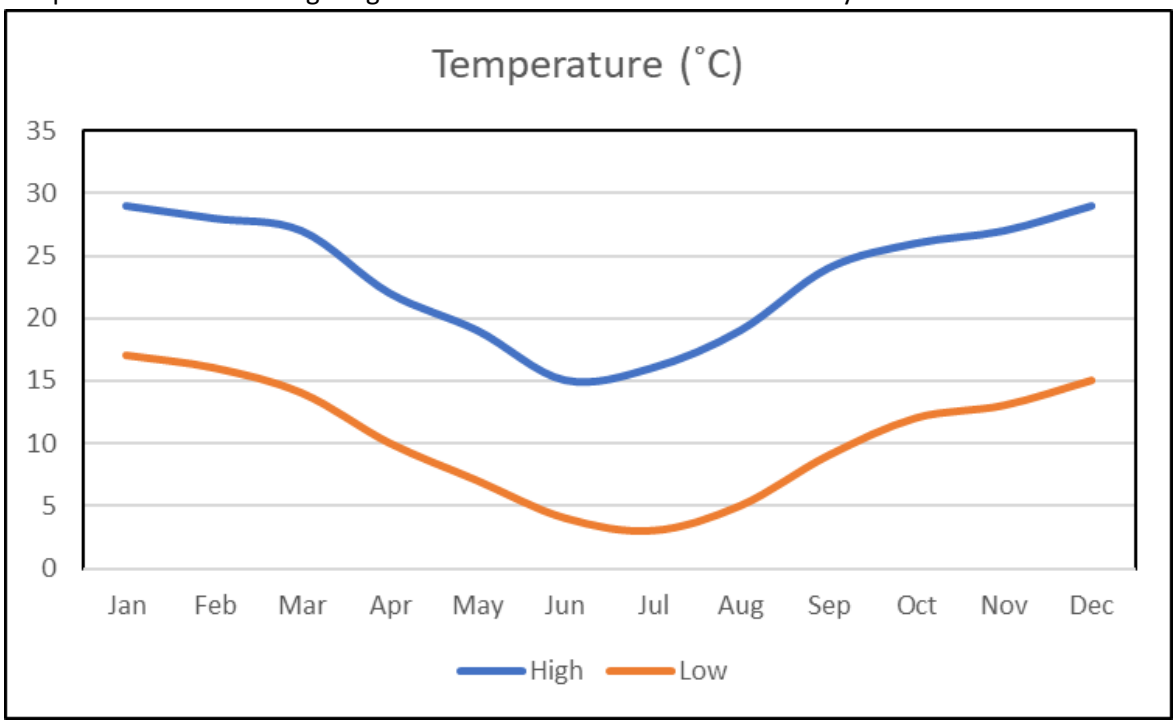


Figure 3: Average Monthly Temperatures

The region is the coldest during July when the mercury drops to 8.4°C on average during the night.

4 METHODOLOGY

A systematic approach was followed in the assessment of the geohydrological situation of the proposed project site. The site was visited on two occasions in order to collect the necessary information for the compilation of the geohydrological report.

4.1 HYDRO-CENSUS

A borehole census was conducted on 22/09/2021. No boreholes were detected as the residents in the area use treated water from the river for domestic purposes.

4.2 GEOPHYSICAL SURVEY

The purpose of the geophysical surveys was to detect and delineate geological structures that could potentially act as, or be associated with, preferential pathways for groundwater migration.

4.2.1 Introduction

Geophysics is considered one of the most cost effective, non-intrusive methods to investigate subsurface properties. The layout of a geophysical survey is not uniform (AlGarni, 2005), and it is therefore necessary to understand the purpose, limitations and capabilities of each selected geophysical method. All geophysical data is analysed and interpreted in terms of local geology and geohydrological aspects.

The geophysical survey includes a desktop study of the area's geophysical properties, followed by a ground geophysical survey. The desktop study included the use of various resources such as geological, topographical and airborne magnetic maps. By incorporating these different maps with one another, an appropriate on-site geophysical investigation layout may be designed, implemented and interpreted in accordance to local geological conditions.

4.2.2 Approach to the Geophysical Investigation

As part of the geophysical investigations, the following actions were taken:

- A geological map covering the area under investigation studied to determine the geological conditions that can be expected and to ascertain whether any large-scale geological features have been mapped in the immediate vicinity of the study area.
- An airborne magnetics map was used to identify large-scale magnetic features in the vicinity of the study area that may be indicative of changes in the subsurface geological conditions.
- Magnetic data were recorded on traverses across the survey area. The aim of the magnetic survey was to investigate the presence of magnetic structures, such as dolerite dykes and sills, in the vicinity of the investigated site.
- All the geophysical data recorded during the investigations were processed and interpreted in terms of the local geological and hydrogeological conditions.

4.2.3 Magnetic method and equipment

By incorporating existing knowledge on the geological conditions of the site being surveyed, the magnetic anomalies recorded during a survey may be interpreted in terms of the local geological

conditions. The magnetic survey was conducted using a proton magnetometer. The purpose of the magnetic survey was to measure the magnetic response of possible dolerite structures within the area. Changes in the magnetic response were to be interpreted in terms of probable geological causes.

4.2.4 The Magnetic Method

The magnetic method is the oldest of all applied geophysical techniques. During the Middle Ages, dip needles and compasses were already used in Sweden to find magnetite (Milsom, 2003).

The aim of a magnetic method is to detect and analyse magnetic variations in earth's magnetic field caused by magnetic properties in subsurface structures or formations (Mariita, 2008). These variations, referred to as anomalies, may be interpreted in terms of local geological structures.

According to Fourie et al. (2015), the behaviour of recorded anomalies is influenced by the depth, geometry, anomalous structure, direction and degree of magnetisation of a subsurface structure or formation with respect to earth's magnetic field. Dykes, faults and lava flows are common causes of magnetic anomalies (Mariita, 2008) as they contain magnetic properties. Figure 4 shows an example of magnetic anomalies influenced by different geological structures.

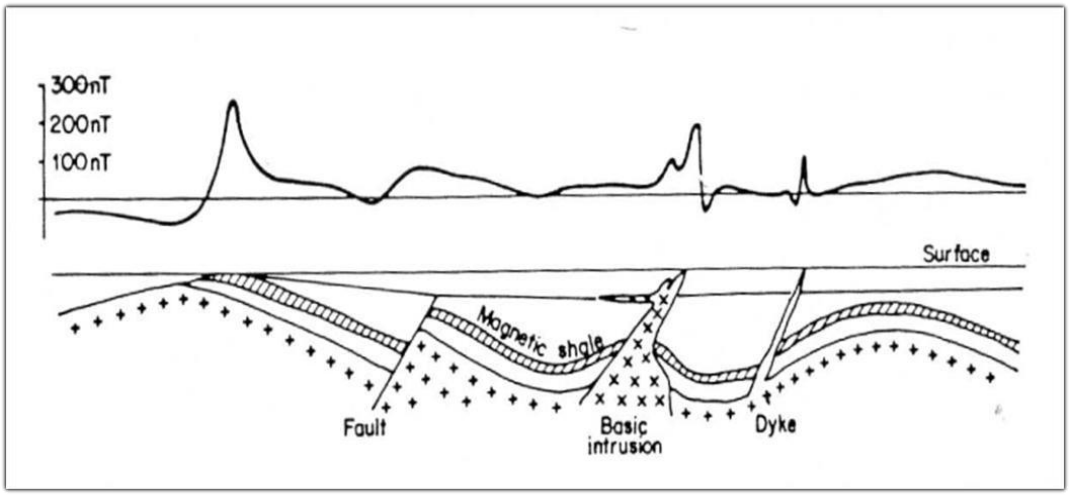


Figure 4: Basic concept of magnetic anomalies caused by geological structures

The inherent magnetism of a rock is called magnetic susceptibility. The earth's crust contains magnetic minerals such as magnetite (Fe_3O_4), pyrrhotite (FeS) and ilmenite ($FeTiO_3$) which are widely distributed in various quantities (Fourie et al. 2015). Magnetite is the most abundant of the lot. Fourie et al. (2015) describes that due to metamorphic or igneous rocks having high magnetite (common magnetic mineral) content, sedimentary rocks generally have very small magnetic susceptibility in comparison. This is supported by Table 1 illustrating magnetic susceptibilities of different ores and rocks, adjusted from (Milsom, 2003).

Common Rocks	
Slate	0 - 0.002
Dolerite	0.01 - 0.15
Greenstone	0.0005 - 0.001
Basalt	0.001 - 0.1
Granulite	0.0001 - 0.05
Rhyolite	0.00025 - 0.01
Salt	0 - 0.001
Grabbo	0.001 - 0.1
Limestone	0.00001 - 0.0001
Ores	
Hematite	0.001 - 0.0001
Magnetite	0.1 - 0.0001
Chromite	0.1 - 20.0
Pyrrhotite	0.001 - 1.0
Phyrite	0.0001 - 0.005

Table 2: Magnetic susceptibilities of different rocks and ores (Milsom, 2003)

4.2.5 Magnetic Instrumentation

In modern times, magnetometers are widely used to measure the orientation and strength of a magnetic field with accuracies of up to 0,002 %. Various types of magnetometers exist such as rotating coil-, proton precession-, hall effect-, overhauser effect-, fluxgate-, caesium vapour– and spin-exchange relaxation-free (SERF) atomic magnetometers. For this study, a proton recession magnetometer was selected for use. Mariita (2008) explains the functioning of proton-precession magnetometers as follows:

Different proton magnetometers operate on broadly similar principles such as utilising proton rich fluids which are surrounded by an electric coil. The electrical coil receives momentary currents and protons are temporarily polarised by the corresponding magnetic field. Once the momentary current is removed, protons either press into the orientation of earth's magnetic field or realign. A small electrical current is in turn generated in the surrounding electrical coil caused by the precession. This electrical current is at a frequency directly proportional to the local magnetic field intensity.

The magnetometer is used to record magnetic measurements along a profile, at an angle that is preferably perpendicular to the extent of the investigated structure. Recorded magnetic measurements are used to create a graph representing local magnetic field intensity. These recordings are then interpreted in terms of local geological structures.

4.2.6 Magnetometer survey

On Thursday, 22 September 2021 a geophysical survey was completed in selected locations of the study area by means of a G5 Magnetometer. After a study of the satellite images and the assessment of the information that was gathered during the borehole census the following data were recorded during the survey.

The following figure indicate the location of the traverses that was completed.

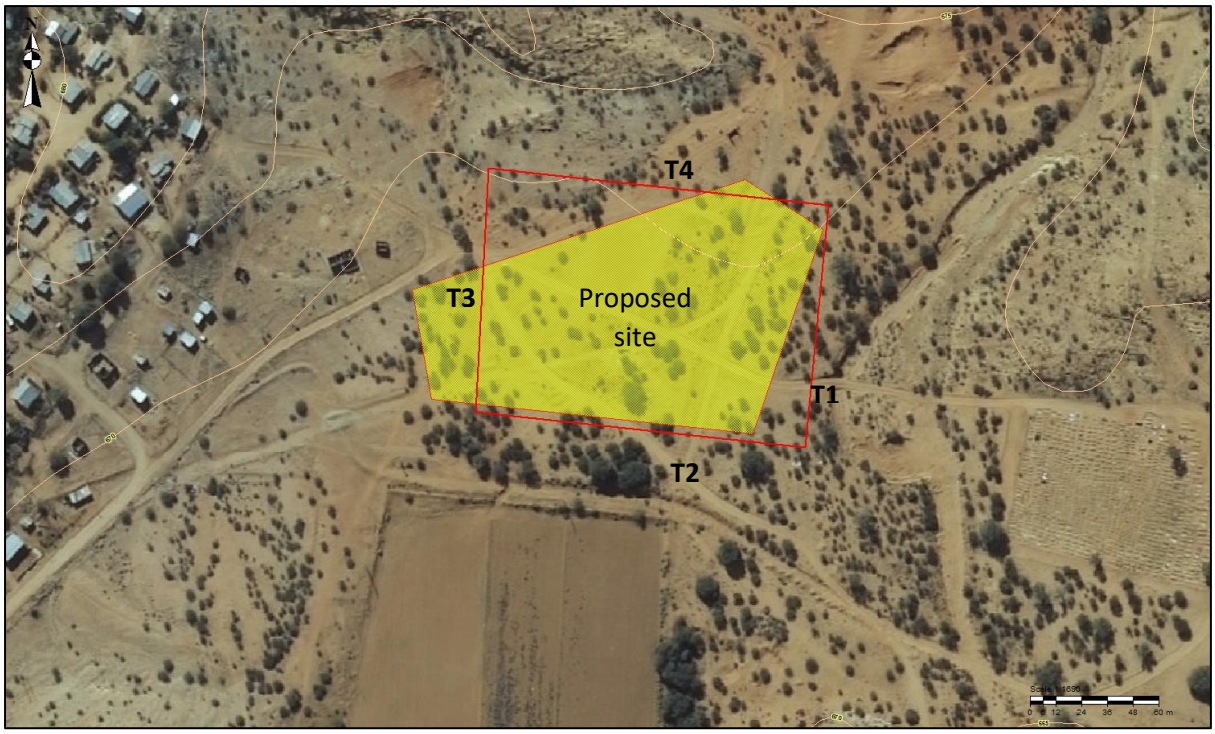


Figure 5: Location of magnetic traverses

Four traverses were completed across the proposed area for development as a cemetery. The figures below give an graphical presentation of the data that was collected by means of four magnetic traverses.

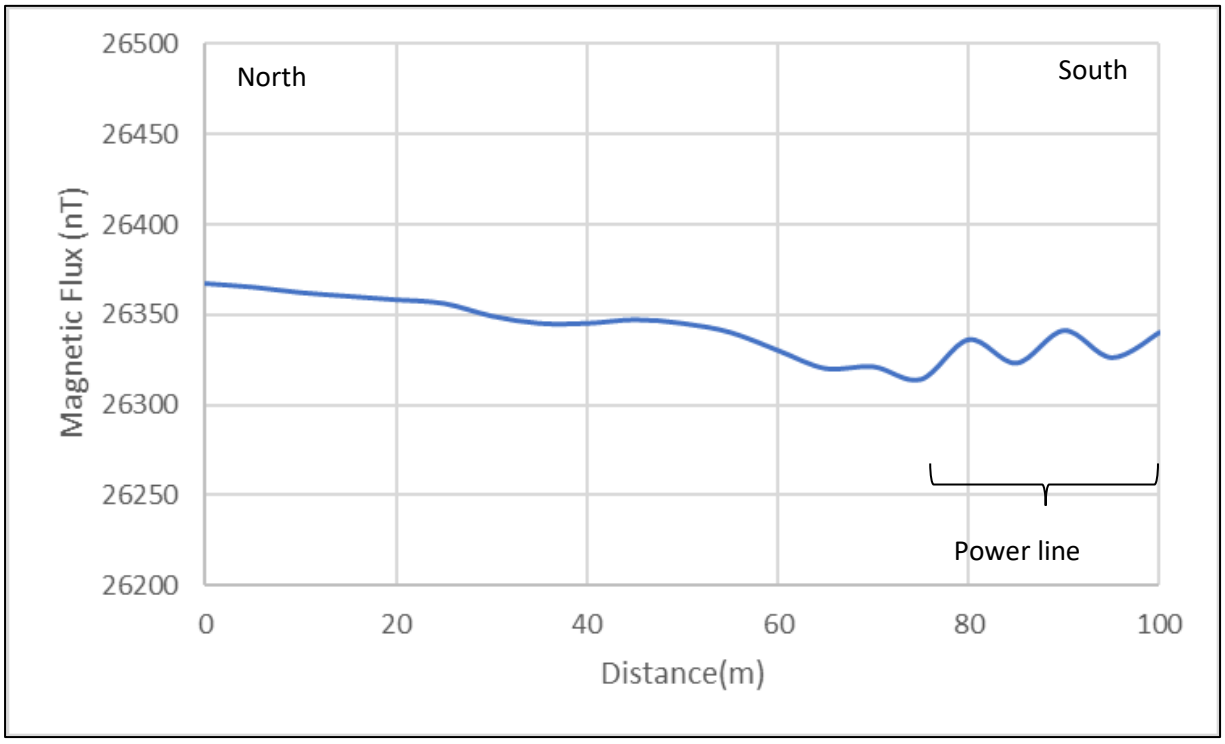


Figure 6: Traverse 1 from north to south

No significant anomalies that can be associated with magnetic intrusions were detected on traverse 1. The fluctuations from 80m to 100m are deemed to be caused by the electromagnetic flux associated with the high power lines in the vicinity.

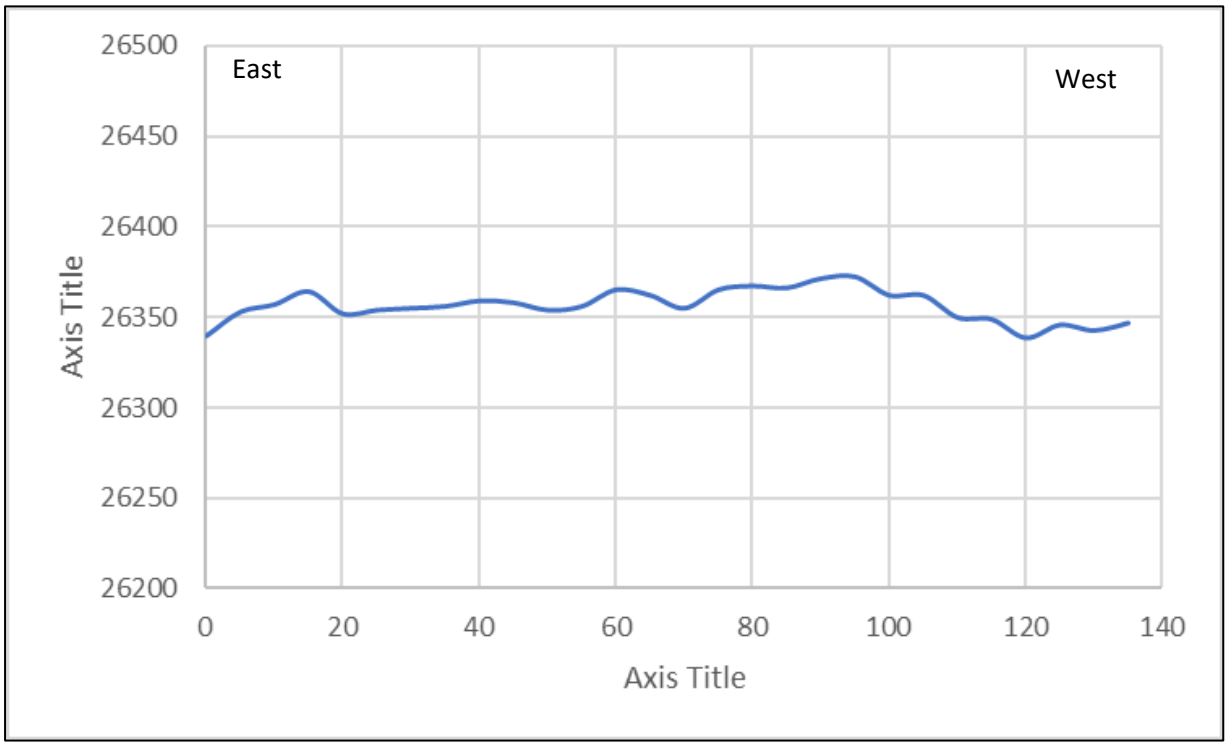


Figure 7: Traverse 2 from east to west

No significant anomalies were detected on traverse 2.

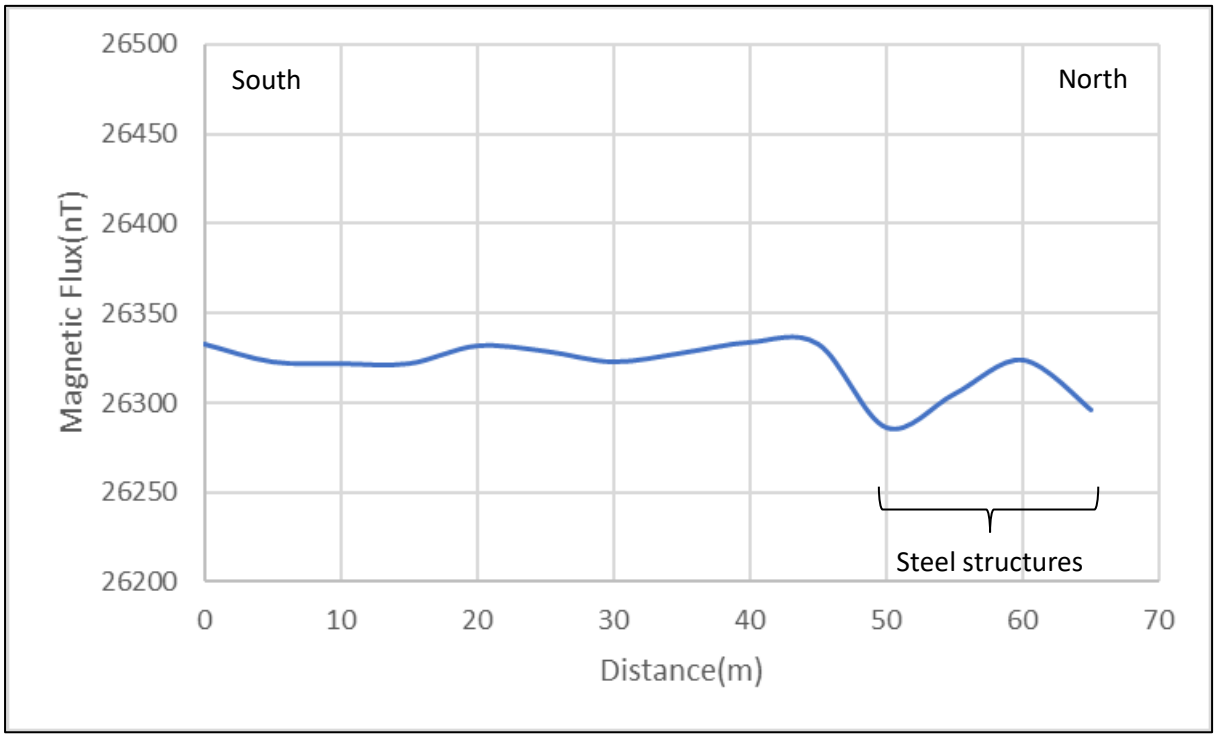


Figure 8: Magnetic traverse 3 from south to north

An anomaly was detected on traverse 3 at 50m, but this traverse passed by tin structures and the anomaly can be associated with these structures, and not a geological occurrence.

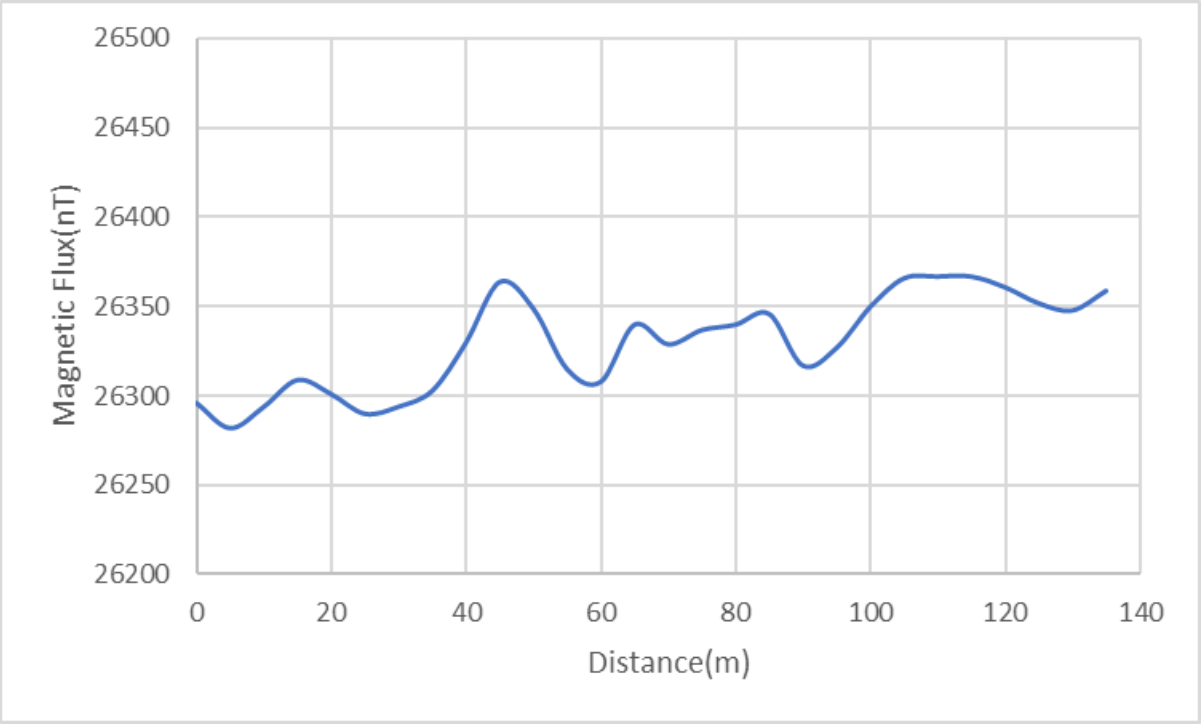


Figure 9: Traverse 4 from west to east

It is uncertain whether the anomalies are a natural occurrence as there are metallic rubble in the area as well. The anomalies that are seen in Figure 9 can be an indication of shallower gneiss but the excitability will be determined by the geotechnical assessment.

4.3 Sampling & Water Quality

According to the groundwater quality map of South Africa that was originally compiled by the CSIR (1999) and recompiled by DWA in 2012, the groundwater in the Lutzburg area is of average quality with an Electrical conductivity of 150-370 mS/m.

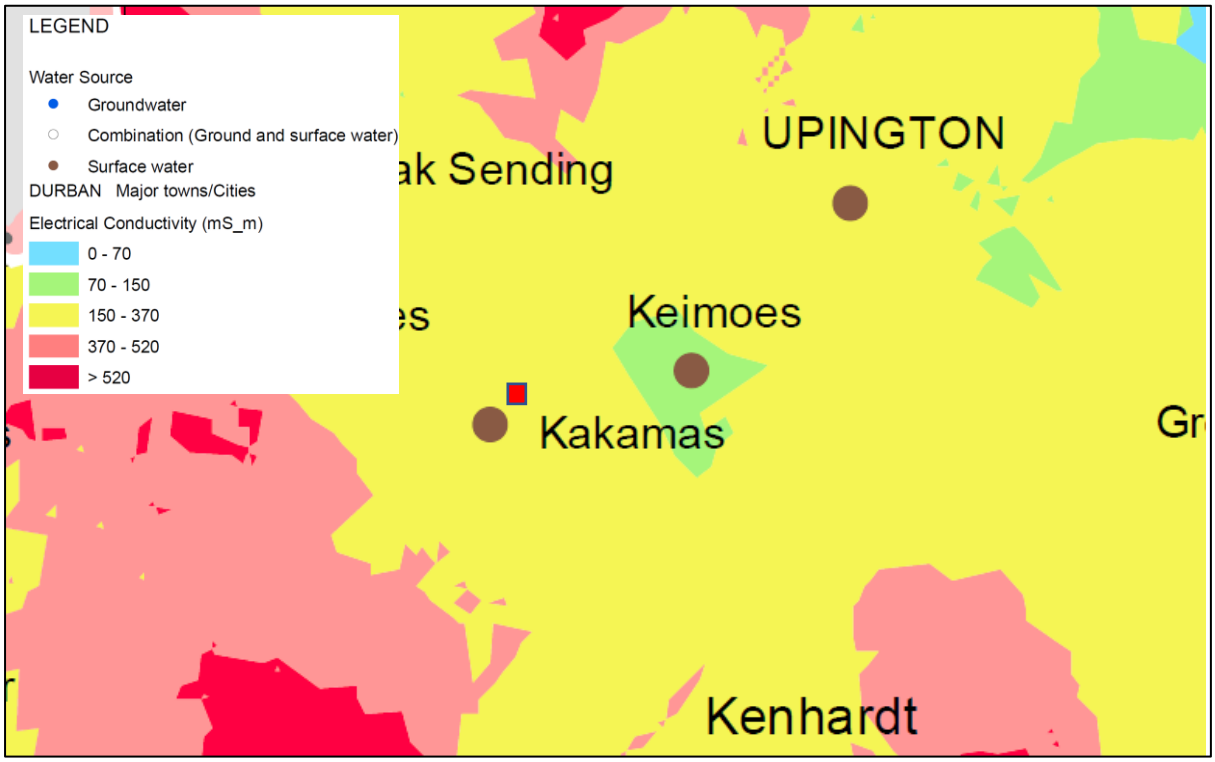


Figure 10: Groundwater Quality Map (DWA 2012)

No boreholes were detected in the close proximity of the proposed site and according to some of the in residents there are very small scale (single household domestic) use of groundwater some distance from the proposed site.

4.4 GROUNDWATER RECHARGE

Recharge is defined as the process by which water is added from outside to the zone of saturation of an aquifer, either directly into a formation, or indirectly by way of another formation.

The groundwater recharge (R) for the area was calculated using the chloride method (Bredenkamp *et al.*, 1995) and is expressed as a percentage of the Mean Annual Precipitation (MAP). The method is based on the following equation:

$$R = \frac{Cl\ concentration\ in\ rainwater)}{(Cl\ concentration\ in\ groundwater)} \times 100$$

The average rainfall in the area is approximately 89 mm/a. The average chloride in rainfall for areas inland is approximately 1mg/l, therefore according to the equation:

$$R = \frac{1}{370} \times 100 = 0.27\%$$

where 370 mg/l is the maximum chloride concentration value for the proposed area as per the groundwater quality map in Figure 10.

5 PREVAILING GROUNDWATER CONDITIONS

5.1 GEOLOGY

This section consists of information such as general geology, geological logging and soil characteristics as observed during the field survey and desk study.

5.1.1 LITHOSTRATIGRAPHY

The lithostratigraphy consists mainly of the following as adapted from "The Geology of the Upington area" by H.F.G Moen (2006):

5.1.1.1 Namaqua Geological Province

The portion that is generally exposed in the Upington map area comprises mainly of a succession of steeply dipping metasedimentary and metavolcanic rocks intruded by voluminous granitoids and dissected by faults and shear zones. The metamorphic grade varies from upper amphibolite/granulite fasies over most of the area to greenschist in the east. The rocks are unconformably overlain by the Koras Group, consisting of unfolded lavas, sediments and associated intrusives. Most of the area is covered by windblown sand from the Kalahari Group and underlain by extensive calcrete deposits in the northeast.

The following Subprovinces are found in the *Namaqua Metamorphic Province*:

Bushmanland Subprovince

Gordonia Subprovince

Kheis Subprovince

Richtersveld Subprovince

The project area under discussion is found in the *Gordonia Subprovince* terrain which is bounded to the east by the Trooilapspan Shear and by the Hartebees River thrust in the west. Only the exposed part of the Trioolspan shear is indicated on the map in Figure 5. The Neusspruit shear is situated approximately 7 km to the east of the proposed development.

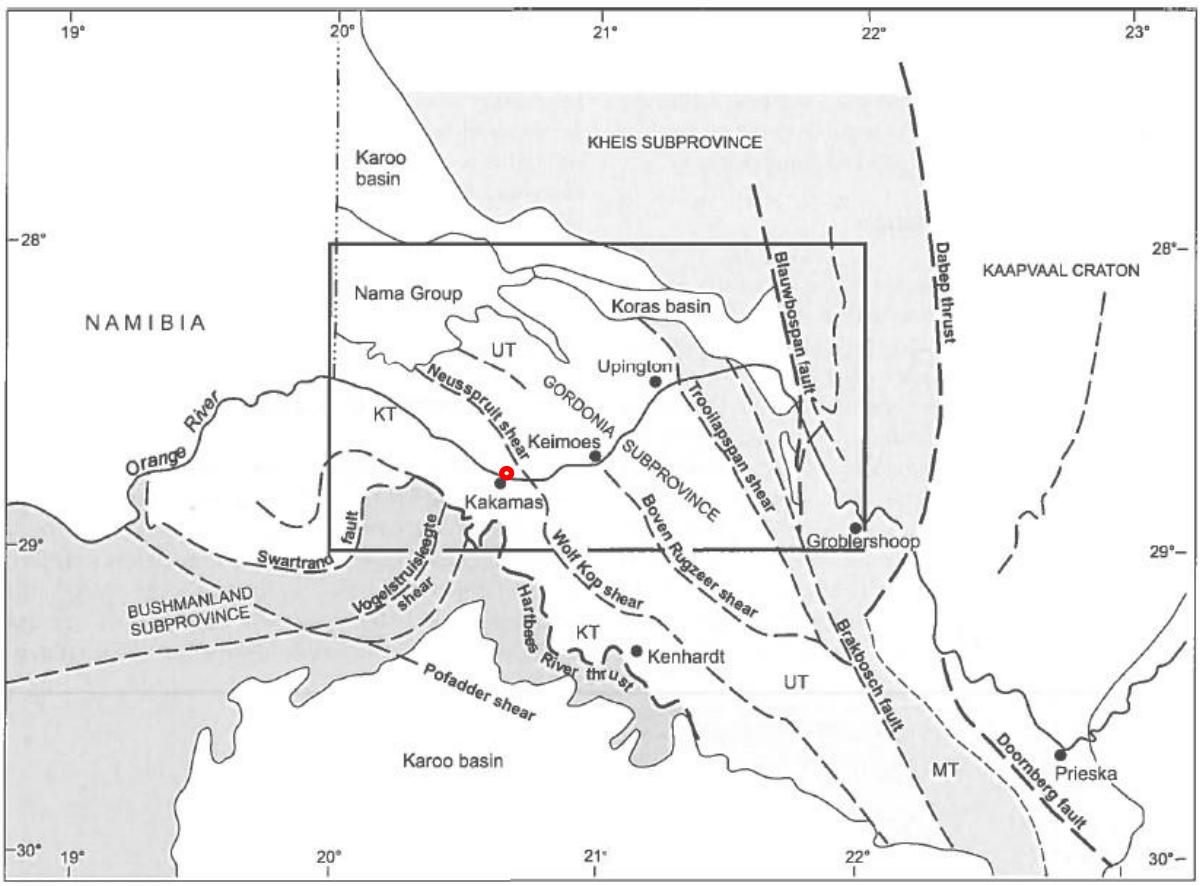


Figure 11: Major Tectonic divisions in eastern Namaqualand

Within the *Gordonia Subprovince* a number of formations, suites and complexes are found. The *Gordonia Subprovince* can be subdivided into the metasedimentary rocks and the intrusive rocks (Granites and Gneisses).

5.1.2 LOCAL GEOLOGY – GEOLOGICAL MAP

Figure 12 below indicates the geological map of the study area.

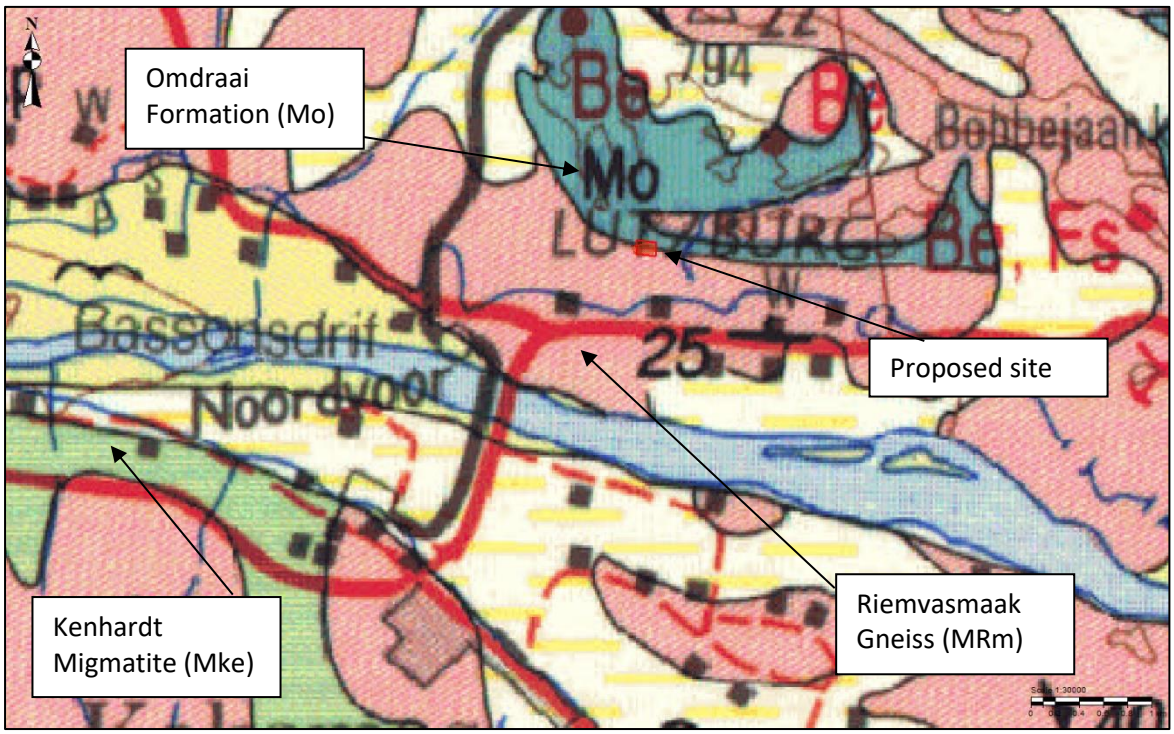


Figure 12: Geological Map Interpretation

From the geological map it is evident that the proposed site is situated on the intrusive *Kenhardt Migmatite (*MKE*)* and *Omdraai formation* (Mo) associated the Gordonia Subprovince.

Riemvasmaak Gneiss: The quartzofeldspathic *Riemvasmaak Gneiss* has become widely known as "pink gneiss" due to its characteristic red-brown weathering colour. The *Riemvasmaak Gneiss* underlies large areas of the western part of the Upington mapped area, especially northwest of Kakamas to the south-eastern part of its kind in Riemvasmaak where it is intruded by the Eendoring Suite. In almost all its occurrence area the

Riemvasmaak Gneiss is associated with the metasediment of the Korannaland Group.

Although it appears highly weathered the *Riemvasmaak Gneiss* has a tendency to form large exfoliation domes.

Omdraai Formation (Mo) of the Biesje Poort Subgroup of the Kanoneiland Group of the Gordonia Subprovince consists of Schistose leucocratic often well bedded semipelitic metasediments.

Other formations that are found in the vicinity of the project site is:

Kenhardt Migmatite (MKE) of the Vyfbeker Metamorfic Suite of the Hartebees River Complex of the Gordonia Subprovince consists of coarse-grained biotite gneiss with scattered augen-shaped porphyroblasts. Amphibolite lenses are a common feature of the Kenhardt migmatites. In places the banded heterogeneous character of the gneiss is displayed.

Alluvium deposits are found in the lower laying areas that borders the Orange river. These fine-grained silt sediments were deposited by slow moving, silt laden water.

5.2 HYDROGEOLOGY

5.2.1 Geohydrological implications of the geological setting.

Despite the great variety of metamorphic and igneous rocks, they are homogeneous in two respects, they have:

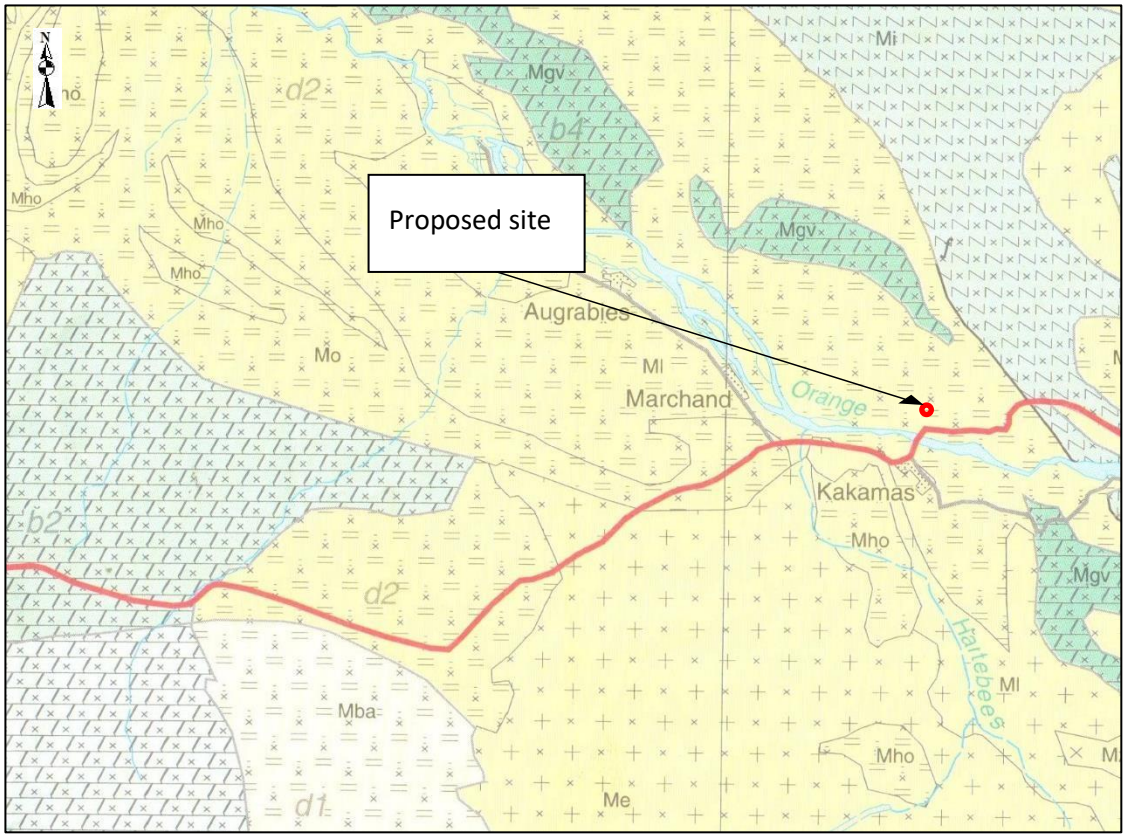
a) Virtually no primary porosity and

b) A secondary porosity due to fracturing and weathering.

In hydrogeological terminology they are referred to as hard rocks.

The water-bearing capacity of unweathered hard rock is restricted to an interconnected system of fractures that is mainly the result of tectonic phenomena. Weathering processes like mechanical disintegration, chemical solution and deposition, modify the porosity of the original fracture system. These actions imply either an increase or decrease in porosity and / or permeability.

Water is evidently mostly struck in fractures in fresh hard rock as the weathering normally only extends to approximately 15 mbgl.



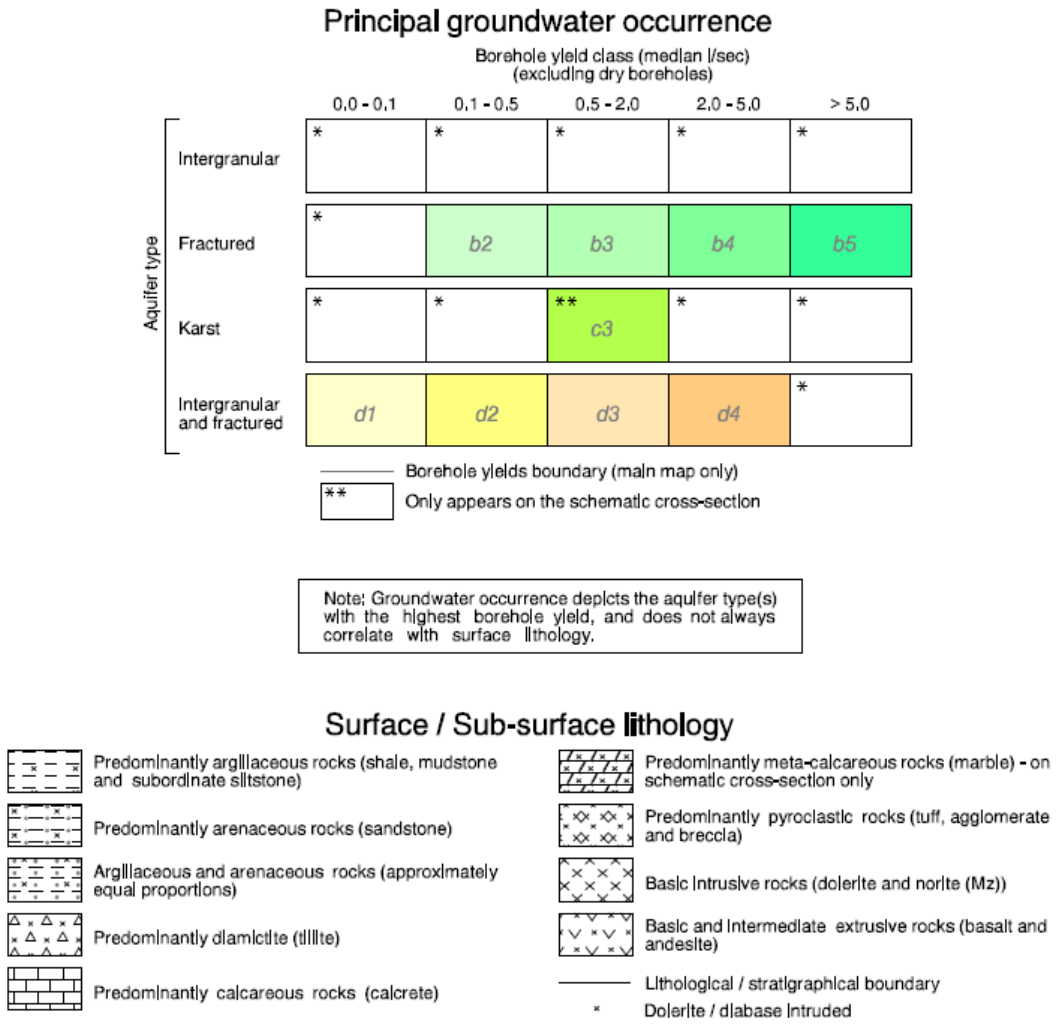


Figure 13: Geohydrological Map of the project area

Farmers that are not in the vicinity of the Orange River rely on groundwater for livestock and domestic use. Borehole yields are generally low, and the groundwater quality is relatively poor due to the presence of nitrates, chlorides and sulphates. Good aquifers are scarce in this area. Good quality groundwater can be found in the quartzites southeast of Upington as well as some gneissic terrains around Kakamas. The average groundwater table is 27.94m below ground level.

The average yield of a successful borehole in this area is between 0.1 and 0.5 l/s.

6 AQUIFER CLASSIFICATION

6.1 GROUNDWATER VULNERABILITY

Aquifer vulnerability refers to the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer.

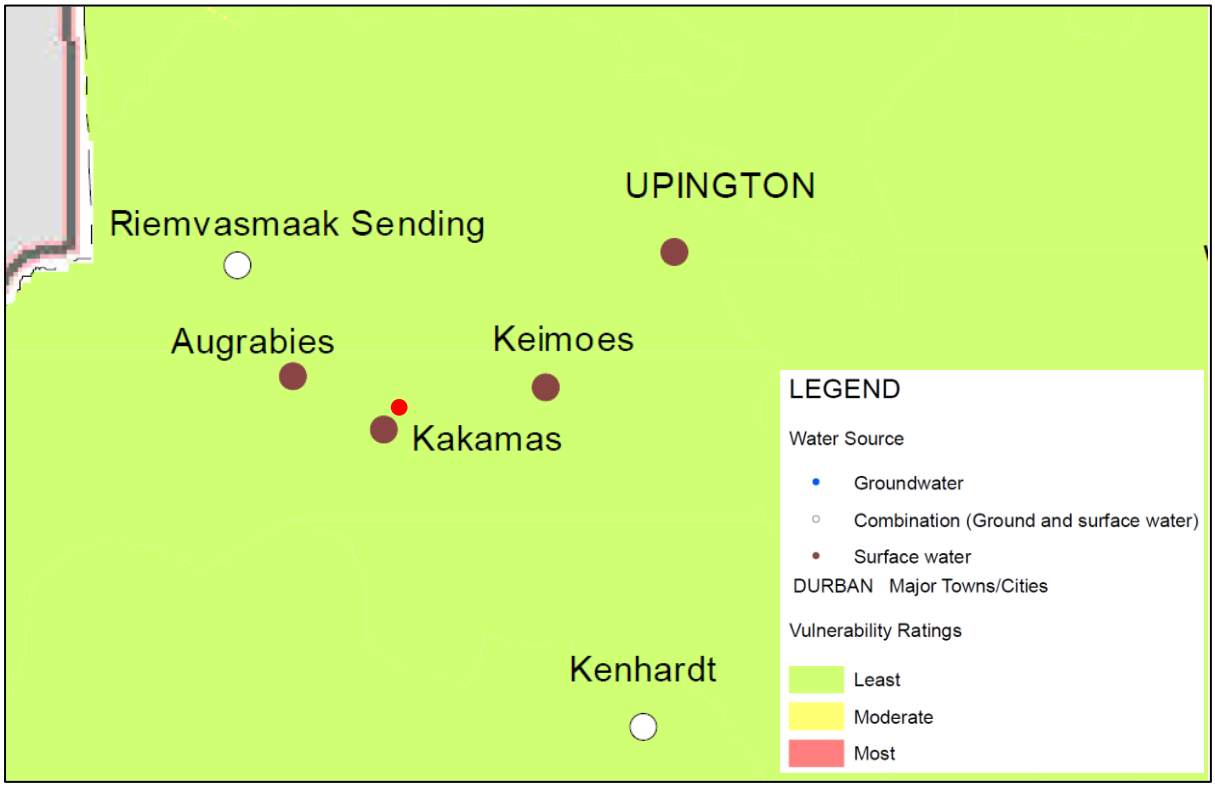


Figure 14: Aquifer Vulnerability Map

According to the aquifer Vulnerability Map the project site is located on a ***least*** vulnerable aquifer.

6.2 AQUIFER CLASSIFICATION

The classification scheme (Parsons, 1995) was created for strategic purposes as it allows the grouping of aquifer areas into types according to their associated supply potential, water quality and local importance as a resource.

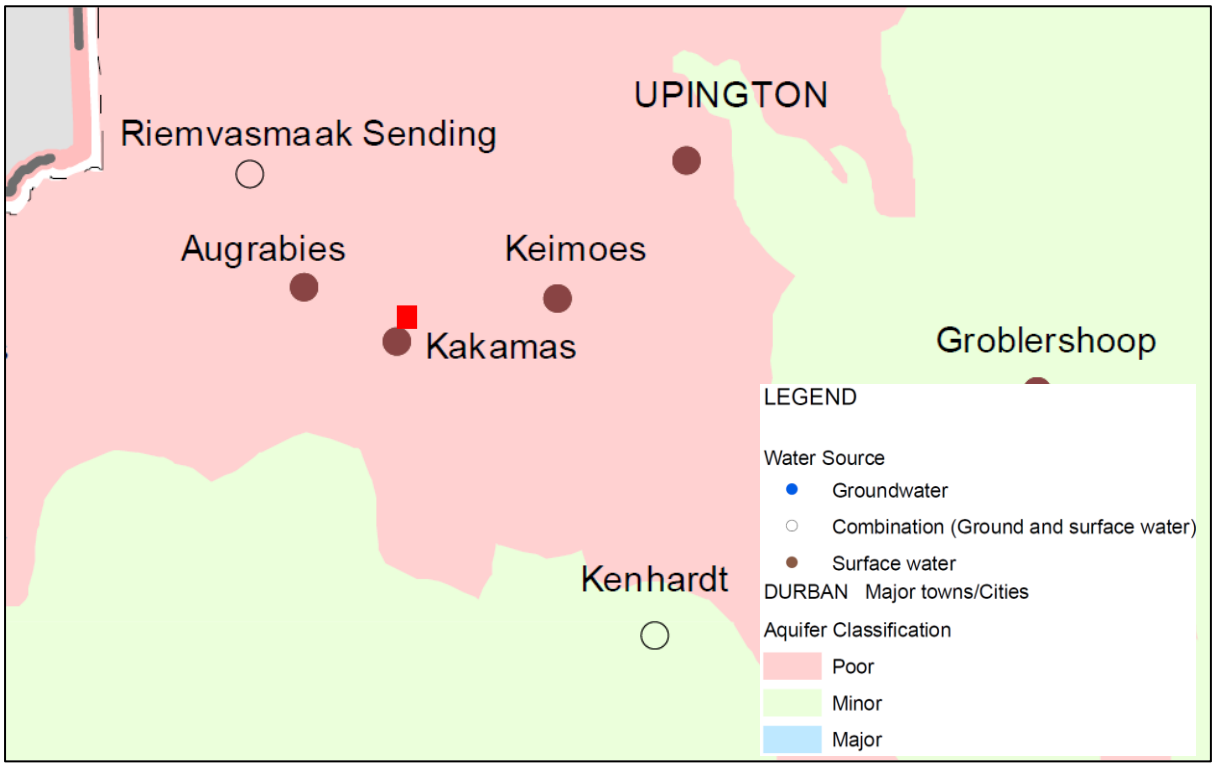


Figure 15: Aquifer Classification Map

Parson's classification system together with the revised version produced by DWA in 1998 is shown in. Groundwater is used for sports field irrigation and general domestic purposes in the area. The fractured aquifer which occurs on site is classified as a ***poor aquifer system***.

Aquifer System	Defined by Parsons (1995)	Defined by DWAF Min Requirements (1998)
Sole Source Aquifer	An aquifer which is used to supply 50 % or more of domestic water for a given area, and for which there are no reasonably available alternative sources should the aquifer be impacted upon or depleted. Aquifer yields and natural water quality are immaterial.	An aquifer, which is used to supply 50% or more of urban domestic water for a given area for which there are no reasonably available alternative sources should this aquifer be impacted upon or depleted.
Major Aquifer	High permeable formations usually with a known or probable presence of significant fracturing. They may be highly productive and able to support large abstractions for public supply and other purposes. Water quality is generally very good (<150 mS/m).	High yielding aquifer (5-20 L/s) of acceptable water quality.

Aquifer System	Defined by Parsons (1995)	Defined by DWAF Min Requirements (1998)
Minor Aquifer	These can be fractured or potentially fractured rocks, which do not have a high primary permeability or other formations of variable permeability. Aquifer extent may be limited and water quality variable. Although these aquifers seldom produce large quantities of water, they are important both for local supplies and in supplying baseflow for rivers.	Moderately yielding aquifer (1-5 L/s) of acceptable quality or high yielding aquifer (520 L/s) of poor quality water.
Poor-Aquifer	These are formations with negligible permeability that are generally regarded as not containing groundwater in exploitable quantities. Water quality may also be such that it renders the aquifer as unusable. However, groundwater flow through such rocks, although imperceptible, does take place, and need to be considered when assessing the risk associated with persistent pollutants.	Insignificantly yielding aquifer (< 1 L/s) of good quality water or moderately yielding aquifer (1-5 L/s) of poor quality or aquifer which will never be utilised for water supply and which will not contaminate other aquifers.
Special Aquifer	An aquifer designated as such by the Minister of Water Affairs, after due process.	An aquifer designated as such by the Minister of Water Affairs, after due process.

Table 3: Summary – Aquifer Classification

6.3 Current Abstraction

The hydro census data indicated that no groundwater users could be found in the close proximity of the proposed site.

7 Geohydrological Impacts

7.1 Construction Phase

7.1.1 Impacts on Groundwater

During the construction phase there are no positive or negative impacts expected due to the low rainfall and the poor aquifer type underlaying the project site.

7.2 Operational Phase

7.2.1 Impacts on Groundwater Quantity

If the impact on groundwater is considered, strictly in terms of quantity, it is evident that the operational phase will not have an impact on the groundwater quantity directly.

7.2.2 Impacts on Groundwater Quality

The area (D73F) has an average recharge rate of 0.27 % of the MAP of 89 mm/a. This implies a very small probability of contamination transport from surface water. It is recommended that the surface water be prevented from entering the subsurface by preventing the formation of depression of the backfill material.

7.2.3 Impacts on Surface Water

The D73F quaternary catchment has a MAR of 2mm/a and no significant surface water impact is expected.

8 GROUNDWATER MONITORING SYSTEM

8.1 PREAMBLE

A long-term monitoring programme must be developed based on the guideline documented in Best Practice Guideline G3. Water Monitoring Systems (2007) available from DWA. These guidelines are summarised and implemented in the proposed monitoring plan.

Effective groundwater monitoring systems consist of the following components:

- Groundwater quality monitoring system.
- Groundwater flow monitoring system.
- Data and information management system.

When designing the monitoring system, the following issues must also be taken into consideration:

- Potential or actual water use
- Aquifer or catchment vulnerability
- Toxicity of chemicals
- Potential for seepage or releases
- Quantities and frequency of release to the environment (point and non-point).
- Management measures in place to minimize risk.

8.2 MONITORING TOOLS

Sampling procedures are discussed in detail in:

- Weaver, J.M.C. 1992a. *Groundwater sampling: A comprehensive guide for sampling methods* (WRC Report No. TT 54/92). Pretoria: Water Research Commission.
- Weaver, J.M.C. 1992b. *Groundwater sampling: An abbreviated field guide for sampling methods* (WRC Report No. TT 56/92). Pretoria: Water Research Commission.

These sampling procedures should be adhered to.

8.3 MONITORING PLAN FOR THE SITE

It is recommended that a borehole be drilled downstream of the proposed site in order to monitor potential impacts of the proposed cemetery on the underlaying poor aquifer.

9 CONCLUSIONS & RECOMMENDATIONS

From the information that was collected during the desk study as well as the site visit, in mind, it is evident that:

- The study area is situated on a minor aquifer system which is associated with boreholes with an average yield between 0.1 and 0.5 l/s.
- No groundwater users were found in the immediate vicinity of the proposed site but in general groundwater is used on small scale for general domestic purposes.
- The aquifer is least vulnerable for contamination due to the fact that the project site is situated on a poor aquifer.
- No significant magnetic anomalies were detected on the proposed site.

It is therefore recommended that:

- The proposed site be utelised for the development of a cemetery as planned.

10 REFERENCES

AC Woodford and L Chevallier (editors) Contributers: JF Botha, D Cole, MR Johnson, R Meyer, M Simonic, GJ Van Tonder, B Th Verhagen - Hydrogeology of the Main Karoo Basin: Current Knowledge and Future Research Needs - WRC Report No. TT 179/02, November 2002, Pretoria

Botha, J.F., Verwey, J.P., van der Voort, I., Vivier, J.J.P., Buys, J., Colliston, W.P. and Loock, J. C. 1998. *Karoo Aquifers – Their Geology, Geometry and Physical Properties.* Report to the Water Research Commission by the Institute for Groundwater Studies, University of the Free State – WRC Report No. 487/1/98, Pretoria.

Bredenhoeft, JD. 2002. The Water Budget Myth Revised: Why Hydrogeologist Model, Vol. 40, No. 4 – Groundwater – July – August 2002 on pages 340 – 345.

Woodford, A.C., Chevallier, L., Botha, J.F., Cole, D., Johnson, M.R., Meyer, R., Simonic, M., van Tonder, G.J., Verhagen, B.Th. 2002. *Hydrogeology of the Main Karoo Basin: Current Knowledge and Future Research Needs*. Water Research Commission. WRC Report No.TT 179/02.

Al-Garni, M. 2005. Application of Magnetic and Electrical Geophysical Methods in the Exploration of Groundwater Resources of Wadi Malakan, Saudi Arabia. Journal of King Abdulaziz University-Earth Sciences, [online] 16 (1), pp.67–93. Available at: <http://prod.kau.edu.sa/centers/spc/jkau/Data/Review_Artical.aspx?No=290>.

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Milsom, J. 2003. Field Geophysics, 3rd ed. THIRD EDIT ed. [online]. The Geological Field Guide Series. Available at: <http://www.deu.edu.tr/userweb/emre.timur/dosyalar/Field Geophysics - John Milsom.pdf>.

APPENDIX E

Public Participation

APPENDIX E_1

List of identified possible interested and affected parties

The proposed construction of a new cemetery, Lutzburg	
Table 1: List of identified possible interested and / or affected parties	
Authorities & Stakeholders	
Organization	**Contact person and contact detail**
Head of Department (Acting): Department of Roads And Public Works	Ms Ruth Palm P.O. Box 3132 Kimberley 8301
HoD: Department of Agriculture & Land Reform: NC	Mr Wvd Mothibi Private Bag X5018 Kimberley 8300
Department of Public Works: NC Property Manager	Private Bag X5002 Kimberley 8300
Ward Councilor: Ward 7	11th Avenue 9 Kakamas 8870 Private Bag X6 Kakamas 8870
Local Municipal Manager	IGA de Waal 11th Avenue 9 Kakamas 8870 Private Bag X6 Kakamas 8870
District Municipal Manager	Mr Abraham Vosloo Private Bag X6039 Upington 8800 Cnr Nelson Mandela Avenue & Upington 26 Road Upington 8800
Chief Director: Northern Cape DWS	Mr Abe Abrahams 28 Central Road Beaconsfield KIMBERLY 8301 Private Bag X6101

The proposed construction of a new cemetery, Lutzburg	
Table 1: List of identified possible interested and / or affected parties	
	KIMBERLEY 8300
Department of Agriculture, Forestry & Fisheries	Ms Jacoline Mans P.O. Box 2782 Upington 8800
SAHRA	P.O. Box 4637 CAPE TOWN 8000
Northern Cape Heritage	Mr Ratha Timothy (Manager) 1 Monridge Parl Cnr. Kekewich Drive & Memorial Road Kimberley 8300
ESKOM	Andrea van Gensen Environmental Manager Land Development & Environment Northern Cape Operating Unit Eskom Holdings SOS Limited DSC Office Block 69 Memorial Road PO Box 606 Kimberley 8301
TELKOM	Ms H. Van den Heever Telkom Wayleave Operations Manager Private Bag X20700 Bloemfontein 9300
Adjacent Landowners	
Landowners of Adjacent Properties (1) **Means of Notification: Hand Delivery on 29 October 2021**	
Property	**Contact Person**
Erf 422	Francina Coetzee
Erf 423	Izak Bezuidenhoudt
Erf 424	Esesta Coetzee
Erf 419	David Jonkers
Erf 420	Leandrie E Jonkers
Erf 421	Elizabeth Bezuidenhoudt
Erf 332	Felisaty Jordien Swartz
Erf 333	Susanna Rooi
Erf 334	Lizel Hassain
Erf 338	Lacy Swarts

The proposed construction of a new cemetery, Lutzburg	
Table 1: List of identified possible interested and / or affected parties	
Erf 339	Mary Witbooi
Erf 340	Fransiena C Frans
Erf 341	Information Unknown
Erf 314	Linda September
Erf 315	Evelin Maasdorp
Erf 316	Anna Kotze
Erf 320	Helena Kotze
Erf 325	Alice Brand
Landowners of Adjacent Properties (2) Means of Notification: Registered Post	
Property	**Owner**
Remainder of the erf 271 C028000500000271 00000	SIYANDA DISTRICT MUNICIPALITY
Remainder of the erf 123 C028001000000123 00000	Kai Garib Local Municipality
Erf 319 C028000500000319 00000	Arborlane Estates (Pty) Ltd *Weltevreden Tweefontein Farm* Ceres, Western Cape 023 317 0617
Erf 262 C028000500000262 00000	Kai Garib Local Municipality
Erf 326 C028000500000326 00000	BARNARD JOHANNA MARGARETHA CRAFFORD mwmuse@mweb.co.za 0729486106 HAAKDORINGSTRAAT 27 WELGEVONDEN ESTATE STELLENBOSCH 7600
Erf 273 C028000500000273 00000	KOUSAS INVESTMENTS PTY LTD PERSEEL 274 LUTZBURG KAKAMAS 8870

The proposed construction of a new cemetery, Lutzburg	
Table 1: List of identified possible interested and / or affected parties	
	SCHRODERSTRAAT 18 UPINGTON 8801 P.O. BOX 204 UPINGTON 8800
Erf 37 C028000500000037 00000	KOUSAS INVESTMENTS PTY LTD PERSEEL 274 LUTZBURG KAKAMAS 8870 SCHRODERSTRAAT 18 UPINGTON 8801 P.O Box 204 UPINGTON 8800
Erf 272 C028000500000272 00000	KOUSAS INVESTMENTS PTY LTD PERSEEL 274 LUTZBURG KAKAMAS 8870 SCHRODERSTRAAT 18 UPINGTON 8801 P.O Box 204 UPINGTON 8800
Erf 39 C028000500000039 00000	CHARLTON JAMES EMMANUEL 7510235405082
Remaining extent of the KAKAMAS	KERKRAAD VAN DIE N G SENDINGGEMEENTE KAKAMAS

The proposed construction of a new cemetery, Lutzburg	
Table 1: List of identified possible interested and / or affected parties	
NORTH SETTLEMENT AGRICULTURAL HOLDING nr 261	
Erf 313	Kai Garib Local Municipality
Erf 317	Kai Garib Local Municipality
Erf 318	Kai Garib Local Municipality
Erf 319	Kai Garib Local Municipality
Erf 324	Kai Garib Local Municipality

APPENDIX E_2

Proof of notification

Site Notices:

Advert:

www.kalaharibulletin.co.za

OM TE ADVERTEER
Tel: 051 404 7600 | Amptelike kennisgewings: noordkaapbulletinlegals@media24.com | Geklassifiseerds: noordkaapbulletinadverts@media24.com

Geklassifiseerd

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PERSOONLIKE DIENSTE

LENINGS 1445

Oorbruggings-kontant vir **Pensioen/Pakket** afwagtendes **Eiendomverkope** (Enkel bedrag) **086 110 1388** **076 886 7655**

EIENDOMME

MOTORHUISE/ BERGING 3260

Stoorplek 6 meter X 7 meter in Kuruman te huur teen R2000.00 per maand. **Skakel 083 524 4995.**

REGSKENNISGEWINGS & TENDERS

VERLORE DOKUMENTE 4045

VERLORE OF VERNIETIGDE AKTE

Kennisgewing geskied hiermee ingevolge Regulasie 68 van die Registrasie van Akteswet, 1937, van die voorneme om aansoek te doen vir die ultreiking van 'n gesertifiseerde afskrif van Akte van Transport NOMMER T101942/1996 gepasseer deur HOPETOWN PLAASLIKE OORGANGSRAAD ten gunste van GARIEP ONTWIKKELING BK, CK NR. 96/32818/23 ten opsigte van ERF 2570 (GED VAN ERF 1) HOPETOWN, geleë in die Gebied van die Hopetown Plaaslike Oorgangsraad, Afdeling Hopetown, Provinsie Noord-Kaap, GROOT 2,2641 (twee komma twee ses vier een) hektaar wat verlore of vernietig is.
Alle persone wat beswaar teen die uitreiking van sodanige afskrif het, word hiermee versoek om binne twee weke na die datum van publikasie van hierdie kennisgewing skriftelik by die Registrateur van Aktes te Kimberley in te dien.
Gedateer te HOPETOWN op 28 September 2021
Schutte Prokureurs
AKTEBESORGER
Marthinus Bekker Schutte (LPCM 83395)
Van Riebeeckstr, Hopetown, 8750
Kontaknommer: +27532030264
E-pos adres: thinus@schutteprok.co.za

LOST OR DESTROYED DEED

NOTICE IS HEREBY GIVEN IN TERMS OF REGULATION 68 OF THE DEEDS REGISTRIES ACT, 1937, OF THE INTENTION TO APPLY FOR THE ISSUE OF A CERTIFIED COPY OF
Deed of Transfer T1441/2021 passed by The Executors in the estate of the Late
Izak Stephanus Gous in favour of The Trustees of the Izak Gous Familie Trust in respect of the Farm number 493 situate in the district Hay, Province of the Northern Cape AND the Farm number 492 situate in the district Hay, Province of the Northern Cape which has been lost or destroyed.
All interested persons having objection of issue of such copy are hereby required to lodge same in writing with the Registrar of Deeds at Kimberley within two weeks from the date of the publication of this notice.
Dated at Kimberley
This 1st day of October 2021
Duncan & Rothman
PO Box 64, Kimberley, 8300
Ilene@duncan-rothman.co.za
Telnr : 0538384700
File Ref: JAC2/0029

LOST OR DESTROYED DEED

Notice is hereby given in terms of regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of a certified copy of DEED OF TRANSFER NUMBER T940/2007 passed by THE TRUSTEES FOR THE TIME BEING OF HENROUX TRUST, NR. IT54/05, in favour of 1. THOMAS WILLIAM SHIELDS, Identity Number 691118 5133 081, Unmarried 2. ADèLE GROENEWALD, Identity Number 730404 0090 085, Unmarried in respect of certain ERF 36084 KIMBERLEY, SITUATE IN THE SOL PLAATJE MUNICIPALITY DISTRICT OF KIMBERLEY, PROVINCE NORTHERN CAPE which has been lost or destroyed.
All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds at Kimberley within two weeks from the date of the publication of this notice.
Dated at KIMBERLEY this 7 day of OCTOBER 2021.
Applicant: MERVYN JOEL SMITH ATTORNEYS
13 OLIVER ROAD, KIMBERLEY
Contact number: 053-8326293
REF: (R SCHEFFER/ JUDITH//X18445/S1518

EG COOPER MAJIEDT INC.

LOST OR DESTROYED DEED

Notice is hereby given in terms of Regulation 68 of the Deeds Registries Act, 1937, of the intention to apply for the issue of the certified copy of DEED OF TRANSFER T637/2000 Passed by THE MUNICIPALITY OF THE CITY KIMBERLEY
In favour of ANETTA MATHANE
IDENTITY NUMBER 521216 0058 018
UNMARRIED
in respect of ERF 31857 SITUATE IN THE CITY AND DISTRICT
KIMBERLEY, PROVINCE NORTHERN CAPE
IN EXTENT 498 (FOUR HUNDRED AND NINETY-EIGHT) which deed has been lost or destroyed.
All interested persons having objection to the issue of such copy are hereby required to lodge the same in writing with the Registrar of Deeds at BLOEMFONTEIN (DEEDS OFFICE BLOEMFONTEIN) 85 NELSON MANDELA DRIVE, BLOEMFONTEIN CENTRAL, BLOEMFONTEIN, 9301 within two weeks from the date of the publication of this notice.
Dated at BLOEMFONTEIN this 06th day of August 2021.
NAME OF APPLICANT: LINDIE OTELIAH KOUPIS
EG COOPER MAJIEDT INC
77 KELLNER STREET
WESTDENE
BLOEMFONTEIN
CONTACT DETAILS:
051 447 3374,
E-MAIL lindiek@egc.co.za
REF: LKOUPIS/CF/LJ1332

HERBALISTS

MAMA MUNA
het my gehelp met my geld probleme

Alle dokters vra baie geld, maar MAMA MUNA vra geen geld nie. Slegs 'n donasie of geskenk nadat jou probleme opgelos is. Mama Muna help ook met die vlg:
- Bring terug verlore liefde
- Vergroot van manlikheid
- Help met egskeidings
- Voltooi ander dr se werk.

SY IS IN KIMBERLEY **063 949 9406**

MAMA LUCY

VERANDER JOU LEWE!
BRING R200 EN SAK!
BRING TERUG VERLORE LIEFDE
4 IN 1 VERGROTINGS VIR MANS
ONS MAAK ONVOLTOOIDE WERK KLAAR
073 418 5459

Maama Azo
Hou op om desperaat en verward te wees oor wat jy deurmaak. Skakel my nou, moenie bekommerd wees oor geld nie. Ek is die antwoord vir almal. Ontslaan by die werk, wil werk verander? Spreek sukses in u besigheid en toekomsplanne. Maak u huis skoon van boosheid, probleme met bure, geestelike hoop op gebede. Moet asseblief nie tyd mors nie
078 444 8088

CHIEF MARK
- Financial problems
- Marriage problems
- Magic wallet
- Clear debts
- Win lotto

Call/whattsup 065 916 4419

SPIRITUAL HEALER CHRIS
He will help with the following:

- Financial problems
- Unfinished jobs
- Problems at work
- Mens & Womens problems
- Mens enlargement cream
- Health problems
- Relationship problems, like marriage etc.
- Help with Tenders

Contact Healer Chris 084 693 6958

GOOD NEWS TO ALL PEOPLE WHO LOST MONEY TO SANGOMO'S & PASTORS WITHOUT HELP

Early this year I was shocked when I met an old friend of mine who I used to work within 8 years ago. She was driving an expensive car, she took me to her house and company. She also showed me her business in Jacobsdal, I begged her to tell me her secret. Because of our friendship she told me to go see Mama Sandra the spiritual woman and gave me this number. I called her & I was helped after following her quick instructions & that was the end of my long period of suffering, my life changed. I have told many people about Mama Sandra & you pay after job is done & seeing results.

CALL HER NOW TO GET HELP VERY QUICKLY
065 537 5136

BOEDELKENNISGEWINGS

BOEDELS: KREDITEURE EN DEBITEURE 4201

J.M. OOSTHUIZEN
Krediteure en Debiteure – Boedelkennisgewing

In die boedel van wyle (volle name en van): JACOBUS MARTHINUS OOSTHUIZEN
Identiteitsnommer: 640410 5070 08 8
Gebore: 1964/04/10
Oorlede: 6 MEI 2021
van (laaste adres): PERSEEL 4 Q 4, JAN KEMPDORP, 8550
en nagelate eggenoot/eggenote (indien getroud binne gemeenskap van goedere): ALETTA HENDRIËNA OOSTHUIZEN
Identiteitsnommer: 590228 0099 08 8
Gebore: 1959/02/28
Boedelnommer: 002105/2021

Krediteure en Debiteure in bogemelde boedel word versoek om hulle vorderinge in te lewer en hulle skuld te betaal by die kantoor van die ondergenoemde binne 'n tydperk van dertig (30) dae vanaf datum van publikasie hiervan.

Naam en adres van eksekuteur of gemagtigde:
ESSELENS & VENNOTE PROKUREURS
ENDSTRAAT 40,
JAN KEMPDORP, 8550

BOEDELS: LIKWIDASIE EN DISTRIBUSIE 4205

Sanlam

A. Hanekom
In die boedel van wyle ANNELIZE HANEKOM, gebore 11 Mei 1976, Identiteitsnommer 7605110128 088, van Erf 431, Boplaas, Danielskuil, 8405, oorlede 2 Desember 2019.
Boedelnr. 779/2020.
Kennis geskied hiermee dat die Gewysigde Eerste en Finale Likwidasie- en Distribusierekening in bogenoemde boedel ter insae sal lê in die kantoor van die Meester van die Hoogseregshof, Kimberley en van die Landdros, Postmasburg vir 'n tydperk van 22 dae gereken vanaf 7 Oktober 2021.
Naam en adres van Eksekuteur of Gemagtigde
Agent
SANLAM TRUST
Posbus 4235, Bloemfontein, 9300
Tel. 051 407 8012

Terblanche Deceste Trust

A.J.J. du Toit
LIQUIDATION AND DISTRIBUTION ACCOUNTS IN DECEASED ESTATES LYING FOR INSPECTION
Estate late ALBERTUS JACOBUS JOHANNES DU TOIT, ID-number 510527 5042 085, from Farm Bloubospan, Jacobsdal, Province Free State. Estate number: 8811/2020.
In terms of Section 35(5) of the Administration of Estates Act, No. 66 of 1965, notice is hereby given that copies of the First and Final Liquidation and Distribution accounts in the above-mentioned estate will be open for the inspection of all persons with an interest therein for a period of 21 days from the date of publication hereof at the offices of the Master of the High Court, Bloemfontein and Magistrate, Jacobsdal. Should no objection thereto be lodged with the Masters concerned during the specified period, the executors will proceed to make payments in accordance with the accounts.
D.J. Terblanche
TERBLANCHE ATTORNEYS
PO Box 14
PETRUSBURG
9932
E-mail: law@ditsem.co.za
Tel. 081 302 2439

G.H. Swanepoel
LIKWIDASIE- EN DISTRIBUSIEREKENING IN BESTORWE BOEDEL WAT TER INSAE LÊ
Boedel wyle GABRIEL HERMANUS SWANEPOEL, Identiteitsnommer 410626 5046 087, wewenaar, van Plaas 56, Builtfontein, Distrik Barkly-Wes, Provinsie Noord-Kaap.
Boedelnr. 1332/2020.
Kennis geskied hiermee, kragtens Artikel 35(5) van die Wet op die Administrasie van Boedels, nr. 66 van 1965, dat afskrifte van die Eerste en Finale Likwidasie- en Distribusierekening in die bogemelde boedel vir alle belanghebbendes ter insae sal lê vir 'n tydperk van 21 dae vanaf datum van publikasie hiervan in die kantoor van die Meester van die Hoogseregshof, Kimberley en Landdros, Jan Kempdorp/Barkly-Wes.
Indien geen beswaar daarteen gedurende die spesifieke tydperk by die betrokke Meester ingedien word nie, gaan die eksekuteurs voort met betalings ooreenkomstig die rekeninge.
ESSELENS EN VENNOTE PROKUREURS
21ste Laan 58
MOSSELBAAI
6506
E-pos: esselens2@telkomsa.net
Tel. 082 902 3621

BOEDELS: LIKWIDASIE EN DISTRIBUSIE 4205

DUVENHAGE & VAN DER MERWE

J.T. le Roux
In die boedel van wyle JOHN THOMAS LE ROUX, Identiteitsnommer 100607 5006 083, in lewe getroud binne gemeenskap van goed met RENSKE MARIA LE ROUX, Identiteitsnommer 250526 0028 085, wat woonagtig was by Plaas Dawn, Kuruman Distrik. Boedelnr. 48/1989.
Kennis geskied hiermee dat die Aanvullende Eerste en Finale Likwidasie- en Distribusierekening in bogenoemde boedel ter insae lê in die kantoor van die Meester van die Hoogseregshof, KIMBERLEY en 'n afskrif daarvan in die Landdroskantoor, KURUMAN vir 'n tydperk van 21 (een en twintig) dae vanaf 8 Oktober 2021.
PROKUREURS: DUVENHAGE & VAN DER MERWE
Posbus 63
KURUMAN
8460
Tel. 053 030 0094/5
marlene@dvdmprok.co.za

M. Fourie
LIKWIDASIE- EN DISTRIBUSIEREKENING IN BESTORWE BOEDEL WAT TER INSAE LÊ
Boedel wyle MAGDALENA FOURIE, Identiteitsnommer 810131 0021 082, in gemeenskap van goed getroud met JAKOBUS FOURIE, Identiteitsnommer 750730 5115 088, van Poolestraat 12, Klisserville, Kimberley, 8301, Provinsie Noord-Kaap.
Boedelnr. 3059/2019.
Kennis geskied hiermee, kragtens Artikel 35(5) van die Wet op die Administrasie van Boedels, nr. 66 van 1965, dat afskrifte van die Eerste en Finale Likwidasie- en Distribusierekening in die bogemelde boedel vir alle belanghebbendes ter insae sal lê vir 'n tydperk van 21 dae vanaf datum van publikasie hiervan in die kantoor van die Meester van die Hoogseregshof, Kimberley en Landdros, Kimberley.
Indien geen beswaar daarteen gedurende die spesifieke tydperk by die betrokke Meester ingedien word nie, gaan die eksekuteurs voort met betalings ooreenkomstig die rekeninge.
ESSELENS EN VENNOTE PROKUREURS
21ste Laan 58
MOSSELBAAI
6506
E-pos: esselens2@telkomsa.net
Tel. 082 902 3621

Sanlam

M. Smit
In die boedel van wyle MARINDA SMIT, gebore 16 Oktober 1971, Identiteitsnommer 711016 0097 085, van Plaas Rogella, Van Zyls Rus, Noord-Kaap, oorlede 30 November 2019.
Boedelnr. 125/2020.
Kennis geskied hiermee dat die Gewysigde Eerste en Finale Likwidasie- en Distribusierekening in bogenoemde boedel ter insae sal lê in die kantoor van die Meester van die Hoogseregshof, Kimberley en van die Landdros, Mothibistad vir 'n tydperk van 22 dae gereken vanaf 7 Oktober 2021.
Naam en adres van Eksekuteur of Gemagtigde
Agent
SANLAM TRUST
Posbus 4235, Bloemfontein, 9300
Tel. 051 407 8012

BOEDELS: LIKWIDASIE EN DISTRIBUSIE 4205

absa

R.E. Birch
In die boedel van wyle ROHLAND EDWARD BIRCH
Identiteitsnommer: 700202 5277 087
Van: Somersetstraat 3, Hillcrest, Kimberley, 8301
Boedelnr. 2599/2021
Kennis geskied hiermee dat die Eerste en Finale Likwidasie- en Distribusierekening in bogenoemde boedel ter insae sal lê in die kantoor van die Meester van die Hoogseregshof, KIMBERLEY en die Landdros vir 'n tydperk van 21 dae gereken vanaf 08/10/2021.
Naam en adres van Eksekuteur of Gemagtigde:
ABSA TRUST BEPERK
Reg.nr. 1915/004665/06
Posbus 2413, BLOEMFONTEIN, 9300
Tel. 051 401 0621
Faks 051 401 0633
Verw. Mev. Lika Wilson 29831

Notice is given in terms of

(a) Regulation 41(2)(a) of the Environmental Impact Assessment Regulations of 2014, No. 326 published in Government Notice No. 40772 (as amended 2017) under the National Environmental Management Act, 1998 (Act No. 107 of 1998) that an application for environmental authorization will be submitted to the Northern Cape Department of Environment and Nature Conservation (NC DENC)

(b) Regulation 17(3)(a) of the Regulations Regarding The Procedural Requirements for Water Use License Applications and Appeals of 2017 No. R. 267 published in Government Notice No. 40713 of 24 March 2017 under the National Water Act (Act 36 of 1998) Section 21 as amended, that an application for a Water Use License will be submitted to the Department of Water and Sanitation (DWS) (if applicable)

for the following project:

Project: Proposed Construction of a New Cemetery.

Locality: Remainder of the Kakamas North Settlement Agricultural Holding 261, Lutzburg

Proponent: Kai !Garib Local Municipality.

If you have any information or comments regarding the impact of the proposed development or need additional information regarding the above, please submit your name, contact information and interest to Hanlie Stander at MDA (P.O. Box 100982, Brandhof, Bloemfontein, 9324; T: 051 447 1583; F: 051 448 9839; hanlie@mdagroup.co.za) within 30 days of this notice.

Hand Deliveries:

mda

Proof of postage
Initial Notification: 40900
Lutzburg Cemetery

Reason for Possible IAP	Proof of hand delivery
Erf 422	Received by: Francina Coetzee Date: 29/10/021 Signature: F COETZEE
Erf 423	Received by: Isak P. Bezuidenhoudt Date: 29/10/021 Signature: Bezuidenhoudt.
Erf 424	Received by: Ernesto Coetzee Date: 29/10/2021 Signature: E Coetzee
Erf 419	Received by: DAWID JONKERS Date: 29 October Signature: Jonkers
Erf 420	Received by: Leodie E. Jonkers Date: 29/10/2021 Signature: L.E Jonkers
Erf 421	Received by: Elizabeth Bezuidenhoudt Date: 29. 10. 2021 Signature: E. Bezuidenhoudt.
Erf 332	Received by: Felisity Jordien Swart Date: 29-10-2021 Signature: Swart

Proof of postage
Initial Notification: 40900
Lutzburg Cemetery

Reason for Possible IAP	Proof of hand delivery
Erf 333	Received by: Susanna Rooi Date: 29/10/021 Signature: Rooi
Erf 334	Received by: Lizel Hossain Date: 29-10-21 Signature: L. Hossain
Erf 338	Received by: Lucy Swarts Date: 29/10/21 Signature: L. Swarts
Erf 339	Received by: MARY Witbooi Date: 29/10/21 Signature:
Erf 340	Received by: Fransiena C Frans Date: 29/10/021 Signature: F. Frans
Erf 341	Received by: _____ Date: _____ Signature: _____
Erf 313	Received by: _____ Date: _____ Signature: _____

Proof of postage
Initial Notification: 40900
Lutzburg Cemetery

Reason for Possible IAP	Proof of hand delivery
Erf 314	Received by: Linda September Date: 29-10-2021 Signature: LSept
Erf 315	Received by: EVELIN MANSDORP Date: 29-10-2021 Signature: EMansdorp
Erf 316	Received by: Anne Katze Date: 29/10/021 Signature: Katze
Erf 317	Received by: _____ Date: _____ Signature: _____
Erf 318	Received by: _____ Date: _____ Signature: _____
Erf 319	Received by: _____ Date: _____ Signature: _____
Erf 320	Received by: Helena Kotzé Date: 29.10.21 Signature: Kotzé

Proof of postage
Initial Notification: 40900
Lutzburg Cemetery

Reason for Possible IAP	Proof of hand delivery
Erf 324	Received by: _____ Date: _____ Signature: _____
Erf 325	Received by: Alice Brand Date: 29.10.2021 Signature: A.Brand.

APPENDIX E_3

List of registered parties

Table 2: List of registered parties		
Authorities & Stakeholders		
Organization	**Contact person and contact detail**	**Comments and Response**
Head of Department (Acting): Department of Roads And Public Works	Ms Ruth Palm P.O. Box 3132 Kimberley 8301	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
HoD: Department of Agriculture & Land Reform: NC	Mr Wvd Mothibi Private Bag X5018 Kimberley 8300	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Department of Public Works: NC Property Manager	Private Bag X5002 Kimberley 8300	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Ward Councilor: Ward 7	11th Avenue 9 Kakamas 8870 Private Bag X6 Kakamas 8870	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Local Municipal Manager	IGA de Waal 11th Avenue 9 Kakamas 8870 Private Bag X6 Kakamas 8870	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
District Municipal Manager	Mr Abraham Vosloo Private Bag X6039 Upington 8800 Cnr Nelson Mandela Avenue & Upington 26 Road Upington 8800	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Chief Director: Northern Cape	Mr Abe Abrahams 28 Central Road	**Comment:** None to date

Table 2: List of registered parties		
Authorities & Stakeholders		
Organization	**Contact person and contact detail**	**Comments and Response**
DWS	Beaconsfield KIMBERLY 8301 Private Bag X6101 KIMBERLEY 8300	**Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Department of Agriculture, Forestry & Fisheries	Ms Jacoline Mans P.O. Box 2782 Upington 8800	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
SAHRA	P.O. Box 4637 CAPE TOWN 8000	**Comment:** The following comments are made as a requirement in terms of section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA and must be included in the Final BAR and EMPr: • 38(4)a – The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit has no objections to the proposed development; • 38(4)b – The recommendations of the specialists are supported and must be adhered to. No further additional specific conditions are provided for the development; • 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA

Table 2: List of registered parties		
Authorities & Stakeholders		
Organization	**Contact person and contact detail**	**Comments and Response**
		is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqalabutho Madida 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)d – See section 51 of the NHRA regarding offences; • 38(4)e – The following conditions apply with regards to the appointment of specialists: • With reference to the mitigation work noted above, a qualified archaeologist must be appointed to undertake the work in terms of the permit applied for as noted above; • If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA; • The Final BAR and EMPr must be submitted to SAHRA for record purposes; The decision regarding the EA Application must be communicated to SAHRA and uploaded to the SAHRIS

Table 2: List of registered parties		
Authorities & Stakeholders		
Organization	**Contact person and contact detail**	**Comments and Response**
		Case application. **Response:** The information provided is included in the EMPr. Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs. Copies of the dBAR and fBAR were uploaded to the SAHRIS website.
Northern Cape Heritage	Mr Ratha Timothy (Manager) 1 Monridge Parl Cnr. Kekewich Drive & Memorial Road Kimberley 8300	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
ESKOM	Andrea van Gensen Environmental Manager Land Development & Environment Northern Cape Operating Unit Eskom Holdings SOS Limited DSC Office Block 69 Memorial Road PO Box 606 Kimberley 8301	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
TELKOM	Ms H. Van den Heever Telkom Wayleave Operations Manager Private Bag X20700 Bloemfontein 9300	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.

Table 2: List of Registered Parties		
Adjacent Landowners: Copy of dBAR & fBAR		
Property Name	**Contact Name and Contact Detail**	**Comments and Response**
Remainder of the erf 271	SIYANDA DISTRICT MUNICIPALITY	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Remainder of the erf 123, Erf 262	Kai Garib Local Municipality	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Erf 319	Arborlane Estates (Pty) Ltd *Weltevreden Tweefontein Farm* Ceres, Western Cape 023 317 0617	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Erf 326	BARNARD JOHANNA MARGARETHA CRAFFORD mwmuse@mweb.co.za 0729486106 HAAKDORINGSTRAAT 27 WELGEVONDEN ESTATE STELLENBOSCH 7600	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Erf 37 Erf 272 Erf 273	KOUSAS INVESTMENTS PTY LTD PERSEEL 274 LUTZBURG KAKAMAS 8870 SCHRODERSTRAAT 18 UPINGTON 8801	**Comment:** • Areas indicated in blue and orange belongs to the Church • The Church Council is not aware of the arrangement / consent given to the Municipality • It is stated that the Municipality received consent from the landowner to construct a cemetery on the area under assessment. • Adequate storm water

Table 2: List of Registered Parties		
Adjacent Landowners: Copy of dBAR & fBAR		
Property Name	**Contact Name and Contact Detail**	**Comments and Response**
	P.O Box 204 UPINGTON 8800	management measures must be implemented in order to prevent water damage to the adjacent (and nearby) agricultural developments during the construction and operational phase. Flash floods can occur due to the close proximity of the two drainage lines to the east and west of the site. **Response:** • Correct. Please note that the Municipality and the Church is in discussion with one another regarding the proposed cemetery. This may include the transfer / registering of a servitude or include other alternative arrangements. Annexure A (of Annexure E_5) is an updated Map. A similar map will be included in the fBAR. • Please note that the Municipality and the Church is in discussion with one another regarding the proposed cemetery. Refer to Annexure B and C (of Annexure E_5). • Apologies. The Municipality received consent from the landowner to undertake the necessary studies for a cemetery. The Municipality and the Church is in discussion with one another regarding the proposed cemetery. This may include the transfer / registering of a servitude or include other alternative arrangements. Please refer to Annexure B and C (of Annexure E_5). • Noted. As stated in the Environmental Management Programme to be included in the fBAR, proper storm water

Table 2: List of Registered Parties		
Adjacent Landowners: Copy of dBAR & fBAR		
Property Name	**Contact Name and Contact Detail**	**Comments and Response**
		management measures will be implemented during the construction and operational phase. Should the application be successful (receive Environmental Authorisation), all aspects included in the EMPr should be adhered to. Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Erf 39	CHARLTON JAMES EMMANUEL P.O. BOX 109 KAKAMAS 8870	**Comment:** Was not aware of the plans to construct a cemetery on the said property. • Is not in favour of the proposed development. • Street as well as postal address was provided. • Existing drainage lines releasewater into his property where he cultivates lucerne. The water is also released into the Canal. • The corner area closest to the neighbourhood should not flush open during a rainy event, as it is possible that the graves (and bodies) can then flow downstream. **Response:** • The information provided is noted. • The engineers / designers will take the stormwater channel into consideration during the planning and development stage. Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.
Remaining extent of the KAKAMAS	KERKRAAD VAN DIE N G SENDINGGEMEENTE	**Comment:** None to date **Response:** Copies of the dBAR & fBAR

Table 2: List of Registered Parties		
Adjacent Landowners: Copy of dBAR & fBAR		
Property Name	**Contact Name and Contact Detail**	**Comments and Response**
NORTH SETTLEMENT AGRICULTURAL HOLDING nr 261	KAKAMAS	were posted / delivered by hand / e-mailed to all registered IAPs.
Erf 313 Erf 317 Erf 318 Erf 319 Erf 324	Kai Garib Local Municipality	**Comment:** None to date **Response:** Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs.

APPENDIX E4

List of comments received

SAHRA:

40900 Lutzburg Cemetery

Our Ref:

an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 17841

Date: Friday February 18, 2022

Final Comment

In terms of Section 38(4), 38(8) of the National Heritage Resources Act (Act 25 of 1999)

Attention: KAI !GARIB LOCAL MUNICIPALITY

The proposed construction of a new cemetery Lutzburg, Northern Cape Province

MDA has been appointed by the Kai !Garib Municipality to conduct an Environmental Authorisation (EA) Application for the proposed construction of a new cemetery, Lutzburg, Northern Cape Province.

A draft Basic Assessment Report (DBAR) has been submitted in terms of the National Environmental Management Act, 1998 (NEMA) and the 2017 NEMA Environmental Impact Assessment (EIA) Regulations. The proposed development will include the clearance of vegetation, new access road, water supply to site, ablution facility, conservancy tank, fence, graves will be pre-excavated using TLBs, and site drainage.

Palaeo Field Services were appointed to provide heritage specialist input as required by section 24(4)b(iii) of NEMA and section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA).

Rossouw, L. 2021. Phase 1 Heritage Impact Assessment for proposed new Lutzburg Cemetery, Kakamas NC Province.

No heritage resources were identified within the proposed development area. A small military graveyard and declared heritage site is located 300 m to the north of the study area and will not be impacted by the development. A Chance Fossil Finds Procedure is recommended to be implemented.

Final Comment

The following comments are made as a requirement in terms of section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA and must be included in the Final BAR and EMPr:

- 38(4)a – The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit has no objections to the proposed development;
- 38(4)b – The recommendations of the specialists are supported and must be adhered to. No further

an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

additional specific conditions are provided for the development;

- 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqalabutho Madida 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- 38(4)d – See section 51 of the NHRA regarding offences;
- 38(4)e – The following conditions apply with regards to the appointment of specialists:
- With reference to the mitigation work noted above, a qualified archaeologist must be appointed to undertake the work in terms of the permit applied for as noted above;
- If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA;
- The Final BAR and EMPr must be submitted to SAHRA for record purposes;
- The decision regarding the EA Application must be communicated to SAHRA and uploaded to the SAHRIS Case application.

Should you have any further queries, please contact the designated official using the case number quoted above in the case header.

Yours faithfully

Natasha Higgitt

40900 Lutzburg Cemetery

Our Ref:

an agency of the
Department of Arts and Culture

T: +27 21 462 4502 | F: +27 21 462 4509 | E: info@sahra.org.za
South African Heritage Resources Agency | 111 Harrington Street | Cape Town
P.O. Box 4637 | Cape Town | 8001
www.sahra.org.za

Enquiries: Natasha Higgitt
Tel: 021 462 4502
Email: nhiggitt@sahra.org.za
CaseID: 17841

Date: Friday February 18, 2022

Heritage Officer
South African Heritage Resources Agency

Phillip Hine
Manager: Archaeology, Palaeontology and Meteorites Unit
South African Heritage Resources Agency

ADMIN:
Direct URL to case: https://sahris.sahra.org.za/node/591777
(, Ref:)

Terms & Conditions:

1. This approval does not exonerate the applicant from obtaining local authority approval or any other necessary approval for proposed work.
2. If any heritage resources, including graves or human remains, are encountered they must be reported to SAHRA immediately.
3. SAHRA reserves the right to request additional information as required.

Charlton James Emmanuel

Mnr Charlton,

Soos telefonies bespreek, die volgende:

1.
MDA is aangestel om die omgewingsimpakstudie vir die voorgestelde begrafplaas te Lutzburg te hanteer.

2.
As deel van die proses, wil ons inligting aan alle aangrensende eienaara stuur.

3.
U eiendom (eeinheid 39) is aangrensend tot die Kerksgronde, en daarom wil ons vir u ook die inligting aanstuur.

4.
Ons sal dit waardeer indien u u pos, en straatadres vir ons sal aanstuur.

Byvoorbaat dank,

Hanlie Stander
MDA
15:03

Goeie middag Hanlie

Ek was nie bewus van n plan om n begrafnisplaas langaan my perseel op te rig nie.

Ek is glad nie ten gunste daarvan nie, dit is reg langs my wooning, dit sal n groot probleem afgee op die lang termyn
15:43

Mnr Charlton,

Sien asseblief die kaart wat ek aanstuur. Die voorgestelde begrafplaas is naby aan die bestaande begrafplaas.
15:46

U eiendom word in turquoise aangedui. Die bestaande begrafplaas in rooi (290m) en die voorgestelde begrafplaas in oranje.
15:59

Dankie
16:00

Ons sal al die inligting aan u stuur en u word dan die geleentheid gebied om skriftelik kommentaar te lewer. U kommentaar word ook by NC DENC (omgewingsake) ingedien.
16:01

14 January 2022

Mnr Charlton,

Sal u asseblief u straat en posadres aan ons stuur sodat ons die nodige inligting rakense die bogenoemde projek aan u kan pos?

Groete,

Hanlie Stander
08:56

Goeie More Hanlie

James Charlton
Ej.charlton21@gmail.com
082 485 1997

Perseel 39, (Gedeelte van perseel 3)
Kakamas
8870

Pos Bus 109
Kakamas
8870
10:01

Daar waar die woonbuurt begin aan die voet van die koppie en vanaf daardie rooigrond seksie is n vloed weg, wanneer ons 80% reen kry dan oor vloed daardie gebied,
Dit bring al die afloop water langs daardie wingerd tot op my lerseel dan oor vloed aal daardie water my lusern en selsfs tot in die kanal
10:04

So let ne dat die hoek gedellte naasta aan die woon buurt nie oopge spoelword nie, dan kan daai grafte met die stroom af te dryf
10:06

Dankie vir die inligting.

Ons sal die DRAFT BAR aan u pos.
U kommentaar sal in die FINAL BAR aangespreek word.

Ñ afskrif waarvan sal ook aan u gestuur word.

Groete,

Hanlie
10:32

Dankie, Groete
James
10:35

Kousas Investments (PTY) LTD:

Kousas Investments (Pty) Ltd.

REG NR. 2005/010824/07

Po Box 496, Kakamas, 8870

Sel: 0829215342 Fax: 0866782564

20 February 2022

Attention: Neil Devenish (neil@mdagroup.co.za)

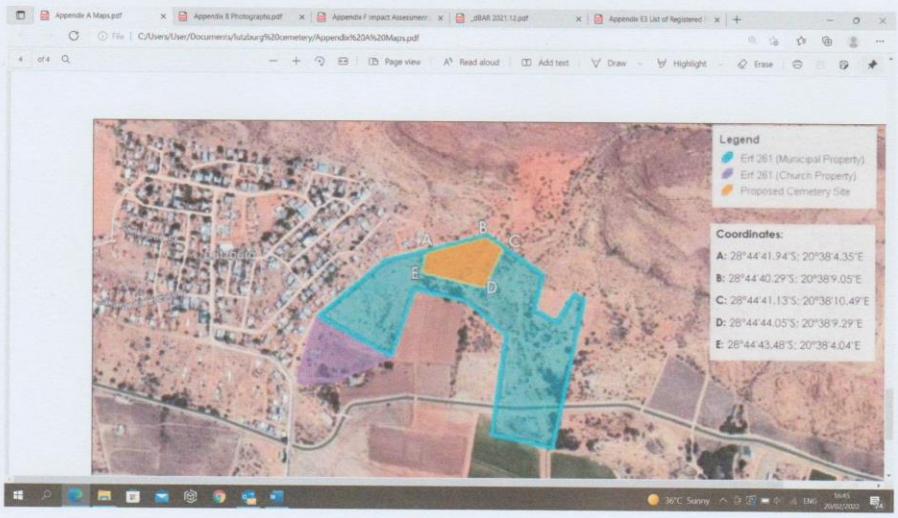
Po Box 100982

Brandhof

Bloemfontein

Comments on draft basic assessment report for construction of Lutzburg Cemetery (your reference: MDA 40900)

1. In the screenshot below, the light blue area is indicated as property belonging to the Municipality and the purple area is the property of the Church. To our knowledge, it is exactly the opposite with the light blue area belonging to the church and the purple area belonging to the municipality.



2. We as the neighbours have a land use agreement with the Church (KERKRAAD VAN DIE N G SENDINGGEMEENTE KAKAMAS). Therefor as an affected party, neither us nor the Church council knows about the arrangement/consent given to the Municipality.

   On page 13 of the DBAR, the following statement is made: ***"the Municipality received consent from the landowner to construct a cemetery on the area under assessment".***

   We have consulted with the members of the Church which is the landowners of the assessment area, and they are not aware of this development.

   Will you please attach the written landowner consent in the FBAR because the Municipality is not the owner of the area earmarked for the proposed development.

3. As a neighbouring landowner, adequate storm water management measures must be implemented in order to prevent water damage to our agricultural developments, not only during construction phase but also during the operational phase. Flash floods can occur due to the close proximity of the 2 drainage lines to the east and west of the site.

Elizabeth Susanna Mans (on behalf of Kousas Investments)

Cc: gerhard@dutoitvdheever.co.za

Any further comments received during the PPP will be forwarded to the relevant Environmental Department.

APPENDIX E_5

Response to comments received

SAHRA:

Comment	Response
The following comments are made as a requirement in terms of section 3(4) of the NEMA Regulations and section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA and must be included in the Final BAR and EMPr: • 38(4)a – The SAHRA Archaeology, Palaeontology and Meteorites (APM) Unit has no objections to the proposed development; • 38(4)b – The recommendations of the specialists are supported and must be adhered to. No further additional specific conditions are provided for the development; • 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqalabutho Madida 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)d – See section 51 of the NHRA regarding offences; • 38(4)e – The following conditions apply with regards to the appointment of specialists: • With reference to the mitigation work noted above, a qualified archaeologist must be appointed to undertake the work in terms of the permit applied for as noted above; • If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as	The information provided is included in the EMPr. Copies of the dBAR & fBAR were posted / delivered by hand / e-mailed to all registered IAPs. Copies of the dBAR and fBAR were uploaded to the SAHRIS website.

soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA; • The Final BAR and EMPr must be submitted to SAHRA for record purposes; The decision regarding the EA Application must be communicated to SAHRA and uploaded to the SAHRIS Case application.	

Charlton James Emmanuel:

Town & Regional Planners,
Environmental &
Development Consultants

Makecha Development Associates trading as MDA | CC 1995/030752/23

PO Box 100982 | Brandhof | 9324
Tel: 051 447 1583
Fax: 051 448 9839
e-mail: admin@mdagroup.co.za
9 Barnes Street | Westdene
BLOEMFONTEIN

Proj. Ref: 40900
Contact Person: Hanlie Stander
Date: 24 March 2022

Mr Charlton
P.O. BOX 109
KAKAMAS
8870

ATTENTION: MR CHARLTON

PUBLIC PARTICIPATION PROCESS: LUTZBURG CEMETERY

With reference to the above-mentioned project, the following:

1. Thank you for taking the time to comment on the said project.

2. Your comments, and our response thereto can be summarized as follows:

Nr	MR CHARLTON	MDA
1.	• Was not aware of the plans to construct a cemetery on the said property.	• The information provided is noted. • The engineers / designers will take the stormwater channel into consideration during the planning and development stage.
	• Is not in favour of the proposed development.	
2.	• Street as well as postal address was provided.	
3.	• Existing drainage lines releasewater into his property where he cultivates lucerne. The water is also released into the Canal.	
4.	• The corner area closest to the neighbourhood should not flush open during a rainy event, as it is possible that the graves (and bodies) can then flow downstream.	

3. Note that a copy of this letter will be included in the fBAR.

Trust that you will find the above in order.

Managing Member:
N. Devenish, Pr. Pln (A/1133/1999), B.A., M.TRP. (UFS)

Assisted by:
A.C. Rohrbeck, Pr. Pln (A/153/2009), B.Soc.Sc., M.TRP (UFS)
H. Stander, B.Sc. Zoology, B.Sc. Hons. Zoology, M.Sc. Zoology (UFS)
L. Dreyer, B.Sc. TRP (NWU), M.EM (UFS)

Please do not hesitate to contact us should you require additional information on the above-mentioned project.

Kind regards,
MDA

NEIL DEVENISH Pr. Pln A/1133/1999
Manager: Town Planning/Environmental

Kousas Investments (PTY) LTD:

mda Town & Regional Planners, Environmental & Development Consultants

Makecha Development Associates trading as MDA | CC 1995/030752/23

PO Box 100982 | Brandhof | 9324
Tel: 051 447 1583
Fax: 051 448 9839
e-mail: admin@mdagroup.co.za
9 Barnes Street | Westdene
BLOEMFONTEIN

Proj. Ref: 40900
Contact Person: Hanlie Stander
Date: 24 March 2022

E.S. Mans
Kousas Investments (PTY) LTD
P.O. Box 496
Kakamas
8870

ATTENTION: MS E.S. MANS

PUBLIC PARTICIPATION PROCESS: LUTZBURG CEMETERY

With reference to the above-mentioned project, the following:

1. Thank you for your letter dated 20 February 2022.

2. Your comments, and our response thereto can be summarized as follows:

Nr	Kousas Developments (PTY) LTD	MDA
1.	Areas indicated in blue and orange belongs to the Church	Correct. Please note that the Municipality and the Church is in discussion with one another regarding the proposed cemetery. This may include the transfer / registering of a servitude or include other alternative arrangements. Annexure A is an updated Map. A similar map will be included in the fBAR.
2.	The Church Council is not aware of the arrangement / consent given to the Municipality	Please note that the Municipality and the Church is in discussion with one another regarding the proposed cemetery. Refer to Annexure B and C.
3.	It is stated that the Municipality received consent from the landowner to construct a cemetery on the area under assessment.	Apologies. The Municipality received consent from the landowner to undertake the necessary studies for a cemetery. The Municipality and the Church is in discussion with one another regarding the proposed cemetery. This may include the transfer / registering of a servitude or include other alternative arrangements. Please refer to Annexure B and C.

Nr	Kousas Developments (PTY) LTD	MDA
4.	Adequate storm water management measures must be implemented in order to prevent water damage to the adjacent (and nearby) agricultural developments during the construction and operational phase. Flash floods can occur due to the close proximity of the two drainage lines to the east and west of the site.	Noted. As stated in the Environmental Management Programme to be included in the fBAR, proper storm water management measures will be implemented during the construction and operational phase. Should the application be successful (receive Environmental Authorisation), all aspects included in the EMPr should be adhered to.

3. Note that a copy of this letter will be included in the fBAR.

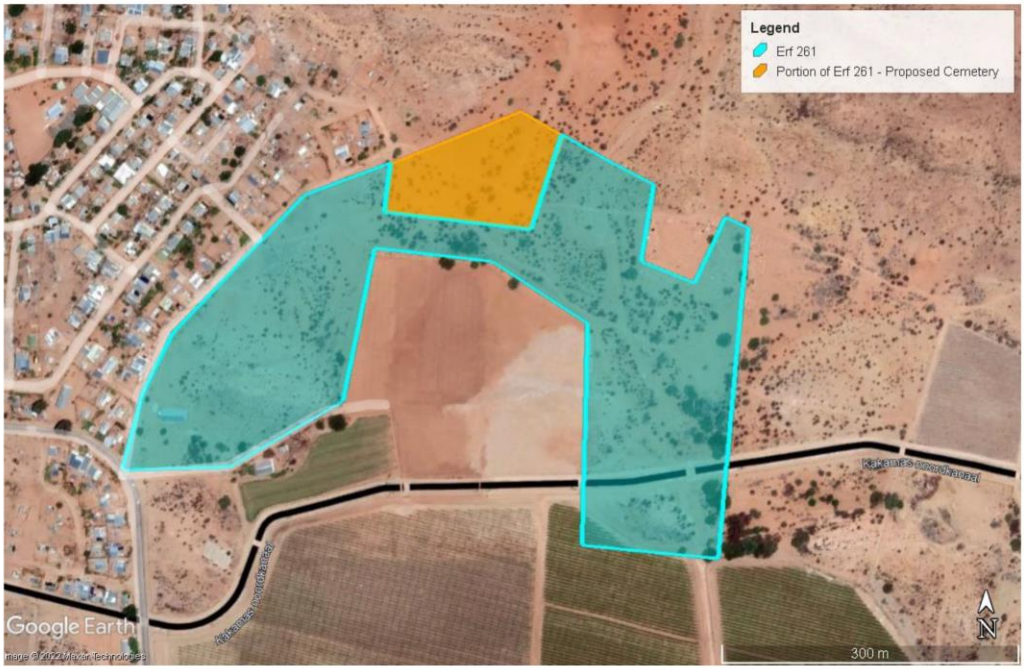
Trust that you will find the above in order.

Please do not hesitate to contact us should you require additional information on the above-mentioned project.

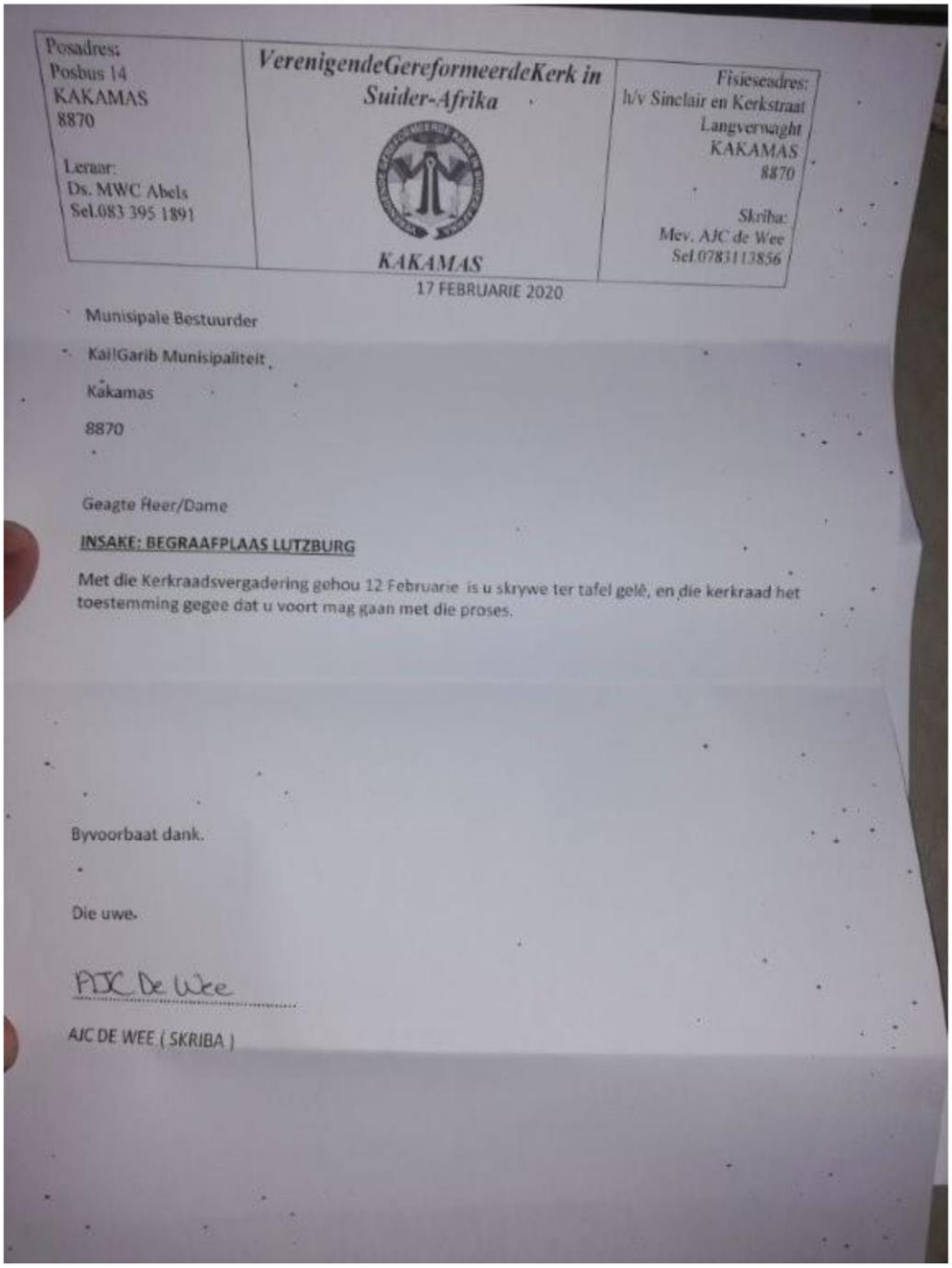
Kind regards,
MDA

NEIL DEVENISH Pr. Pln A/1133/1999
Manager: Town Planning/Environmental

Annexure A
Updated Map


Legend
Erf 261
Portion of Erf 261 - Proposed Cemetery
Google Earth
300 m
N

Annexure B
Signed by AJC de Wee



Posadres:	VerenigendeGereformeerdeKerk in Suider-Afrika	Fisieseadres:
Posbus 14 KAKAMAS 8870 Leraar: Ds. MWC Abels Sel.083 395 1891	KAKAMAS	h/v Sinclair en Kerkstraat Langverwacht KAKAMAS 8870 Skriba: Mev. AJC de Wee Sel.0783113856

17 FEBRUARIE 2020

Munisipale Bestuurder

!Kai!Garib Munisipaliteit

Kakamas

8870

Geagte Heer/Dame

INSAKE: BEGRAAFPLAAS LUTZBURG

Met die Kerkraadsvergadering gehou 12 Februarie is u skrywe ter tafel gelê, en die kerkraad het toestemming gegee dat u voort mag gaan met die proses.

Byvoorbaat dank.

Die uwe.

AJC De Wee

AJC DE WEE (SKRIBA)

Annexure C
Signed by Ds Abels

Munisipaliteit Kai !Garib Municipality

Munisipale Gebou
11de Laan
Tel 054 461 6700
Faks 054 461 6401
E-Pos: mm@kaigarib.gov.za
Privaatsak X 6
KAKAMAS
8870
BTW Reg Nr. 4170193371

Municipal Building
11th Avenue
Tel 054 461 6400
Fax 086 516 9066
E-Mail: mm@kaigarib.gov.za
Private Bag X 6
KAKAMAS
8870
VAT Reg No. 4170193371

KAI !GARIB

IGA de Waal
Handel met hierdie snak

29 Januarie 2020

Consent / Resolution Letter – Remainder of Holding 261
To whom it may concern

It is hereby certified that:

1. The Consistory of the Verenigende Gereformeerde Kerk in Suider-Afrika, Kakamas Congregation is the legal owner of the remainder of Holding 261, Kakamas North Settlement Agricultural Holdings.
2. MAURITZ WILFRED CLAUDÉ ABELS, with the following ID number 590729 5152 087, is given permission by the Consistory of the Verenigende Gereformeerde Kerk in Suider-Afrika, Kakamas Congregation to sign any documentation regarding the proposed application for a cemetery to be submitted to the Northern Cape Department of Environment and Nature Conservation (NC DENC) as well as the Department of Water and Sanitation (DWS).
3. Kai !Garib Local Municipality is also given permission to undertake any study on the above mentioned property as required by NC DENC and DWS in this regard, with all costs to Kai !Garib Local Municipality.
4. Permission is not hereby automatically given to the Kai !Garib Local Municipality to construct a cemetery on the above mentioned property. However, it is hereby confirmed that I, as the landowner, will be willing to discuss compensation / registration of a servitude / other arrangement with Kai !Garib Local Municipality in this regard.

Signed on 12th day of February 2020 in Kakamas.

Signed by the landowner: Abels

Contact information of the landowner:
Cell: 071 713 6998 / 083 395 1891
Postal Address: P O Box 14, KAKAMAS, 8870
E-mail: kakamasvgk@gmail.com
Street Address: c/o Sinclair & Church Street, Langverwacht, KAKAMAS, 8870

APPENDIX E_6

Proof of submission of dBAR to registered parties

mda

Proof of postage
dBAR: 40900
Lutzburg Cemetery

Contact Information	Proof of postage	
MS RUTH PALM HEAD OF DEPARTMENT (ACTING): DEPARTMENT OF ROADS AND PUBLIC WORKS P.O. BOX 3132 KIMBERLEY 8301	INSURED PARCEL ShareCall 0860 111 502 www.sapo.co.za PA 491 913 831 ZA CUSTOMER COPY 301012	
MR WVD MOTHIBI HOD: DEPARTMENT OF AGRICULTURE & LAND REFORM: NC PRIVATE BAG X5018 KIMBERLEY 8300	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487720ZA CUSTOMER COPY 301028R	
DEPARTMENT OF PUBLIC WORKS: NC PROPERTY MANAGER PRIVATE BAG X5002 KIMBERLEY 8300	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487543ZA CUSTOMER COPY 301028R	
WARD COUNCILOR: WARD 7 11TH AVENUE 9 KAKAMAS 8870	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487659ZA CUSTOMER COPY 301028R	
IGA DE WAAL LOCAL MUNICIPAL MANAGER 11TH AVENUE 9 KAKAMAS 8870	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487764ZA CUSTOMER COPY 30102R	
MR ABRAHAM VOSLOO DISTRICT MUNICIPAL MANAGER PRIVATE BAG X6039 UPINGTON 8800	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487693ZA CUSTOMER COPY 30102R	
MR ABE ABRAHAMS CHIEF DIRECTOR: NORTHERN CAPE DWS PRIVATE BAG X6101 KIMBERLEY 8300	INSURED PARCEL ShareCall 0860 111 502 www.sapo.co.za PA 491 913 859 ZA CUSTOMER COPY 301012	

S.A POST OFFICE
2022 -01- 20
No.: 3
BRANDHOF - 9321

mda

Proof of postage
dBAR: 40900
Lutzburg Cemetery

Contact Information	Proof of postage	
MS JACOLINE MANS DEPARTMENT OF AGRICULTURE, FORESTRY & FISHERIES P.O. BOX 2782 UPINGTON 8800	INSURED PARCEL ShareCall 0860 111 502 www.sapo.co.za PA 491 913 828 ZA CUSTOMER COPY 301012	
MR RATHA TIMOTHY (MANAGER) NORTHERN CAPE HERITAGE 1 MONRIDGE PARL CNR. KEKEWICH DRIVE & MEMORIAL ROAD KIMBERLEY 8300	INSURED PARCEL ShareCall 0860 111 502 www.sapo.co.za PA 491 913 845 ZA CUSTOMER COPY 301012	
ANDREA VAN GENSEN ESKOM ENVIRONMENTAL MANAGER P.O. BOX 606 KIMBERLEY 8301	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487702ZA CUSTOMER COPY 301028R	
MS H. VAN DEN HEEVER TELKOM WAYLEAVE OPERATIONS MANAGER PRIVATE BAG X20700 BLOEMFONTEIN 9300	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487486ZA CUSTOMER COPY 301028R	
ARBORLANE ESTATES (PTY) LTD ERF 319, LUTZBURG P.O. BOX 248 AUGRABIES 8874	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487472ZA CUSTOMER COPY 301028R	
BARNARD JOHANNA MARGARETHA CRAFFORD ERF 326, LUTZBURG HAAKDORINGSTRAAT 27 WELGEVONDEN ESTATE STELLENBOSCH 7600	REGISTERED LETTER (with a domestic insurance option) ShareCall 0860 111 502 www.sapo.co.za RC479487662ZA CUSTOMER COPY 301028R	

S.A POST OFFICE
2022 -01- 20
No.: 3
BRANDHOF - 9321

mda

Proof of postage

dBAR: 40900

Lutzburg Cemetery

Contact Information	Proof of postage	
KOUSAS INVESTMENTS PTY LTD ERF 273, ERF 272, ERF 37, LUTZBURG P.O. BOX 204 UPINGTON 8800	**REGISTERED LETTER** *(with a domestic insurance option)* ShareCall 0860 111 502 www.sapo.co.za RC479487605ZA CUSTOMER COPY **301028R**	
CHARLTON JAMES EMMANUEL HOLDING 39, LUTZBURG P.O. BOX 109 KAKAMAS 8870	**REGISTERED LETTER** *(with a domestic insurance option)* ShareCall 0860 111 502 www.sapo.co.za RC479487530ZA CUSTOMER COPY **301028R**	
KERKRAAD VAN DIE N G SENDINGGEMEENTE KAKAMAS HOLDING 261, LUTZBURG P.O. BOX 14 KAKAMAS 8870	**REGISTERED LETTER** *(with a domestic insurance option)* ShareCall 0860 111 502 www.sapo.co.za RC479487591ZA CUSTOMER COPY **301028R**	

S.A POST OFFICE
2022 -01- 20
No.: 3
BRANDHOF - 9301

APPENDIX F

Impact Assessment

IMPACT ASSESSMENT

The proposed construction of a new cemetery Lutzburg, Northern Cape Province

Applicant: Kai !Garib Municipality
MDA Ref No: 40900
Date: November 2021

Town & Regional Planners,
Environmental & Development
Consultants

Physical Address: 9 Barnes Street,
Westdene, Bloemfontein, 9301
Postal Address: P.O. Box 100982,
Brandhof, 9324
Tel: 051 447 1583, Fax: 051 448 9839
E-mail: admin@mdagroup.co.za

1. METHODOLOGY

1.1. Impact assessment must take into account the nature, scale and duration of effects on the environment whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the project stages from planning, through construction and operation to the decommissioning phase. Where necessary, the proposal for mitigation or optimization of an impact is noted. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

1.2. A rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the mitigation of the impact. In assessing the significance of each issue the following criteria (including an allocated point system) is used:

Table: Criteria for the classification of an impact		
Nature	A brief description of the environmental aspect being impacted upon by a particular action or activity is presented.	
Extent (Scale)	Considering the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact.	
	Site	Within the construction site
	Local	Within a radius of 2 km of the construction site
	Regional	Provincial (and parts of neighbouring provinces)
	National	The whole of South Africa
Duration	Indicates what the lifetime of the impact will be.	
	Short-term	The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
	Medium-term	The impact will last for the period of the construction phase, where after it will be entirely negated
	Long-term	The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter
	Permanent	The only class of impact which will be non-transitory. Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient

Table: Criteria for the classification of an impact		
Intensity	Describes whether an impact is destructive or benign. It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.	
	Low	Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected.
	Medium	Effected environment is altered, but natural and social functions and processes continue albeit in a modified way.
	High	Natural, cultural and social functions and processes are altered to extent that they temporarily cease
	Very high	Natural, cultural and social functions and processes are altered to extent that they permanently cease
Probability	Describes the likelihood of an impact actually occurring.	
	Improbable	Likelihood of the impact materializing is very low
	Possible	The impact may occur
	Highly probable	Most likely that the impact will occur
	Definite	Impact will certainly occur
Significance	Significance is determined through a synthesis of impact characteristics. It is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.	
	Low impact	No permanent impact of significance. Mitigatory measures are feasible and are readily instituted as part of a standing design, construction or operating procedure
	Medium impact	Mitigation is possible with additional design and construction inputs
	High impact	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment
	Very high impact	The design of the site may be affected. Intensive remediation as needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw
Status	Denotes the perceived effect of the impact on the affected area.	
	Positive	Beneficial impact

Table: Criteria for the classification of an impact		
	Negative	Deleterious or adverse impact
	Neutral	Impact is neither beneficial nor adverse

The suitability and feasibility of all proposed mitigation measures will be included in the assessment of significant impacts. This will be achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented.

DESCRIPTION AND ADDRESSING OF POSSIBLE IMPACTS, ISSUES AND CUMULATIVE IMPACTS

Developments such as these do have, like many other types of developments, various direct but also indirect impacts on the environment. These impacts have to be managed in order to have the minimum environmental impact and the maximum benefit to man.

Issues identified during the Basic Assessment process are discussed and assessed below:

1. VEGETATION DESTRUCTION						
Assessment						
Mitigation Status	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Local	Permanent	Very high	Definite	High	Negative
With Mitigation	Site	Long term	High	Definite	Medium	Negative
Recommendation						
Phase	**Description of recommendation**					
General	• Please refer to the Specialist Reports in Appendix D for more recommendations					
Planning Phase	• None					
Construction phase and operational phase	• Establishment of alien / invader vegetation will be monitored and these species will be removed by hand or by an approved chemical before gestation thereof. • Vegetation clearance will be limited to the required area. • A permit for the removal of protected plant species will be obtained before the removal of these species (if any). • Care should be taken to limit unnecessary destruction of the natural vegetation. • All human movement and activities must be contained within designated construction areas and the planned site access road in order to prevent peripheral impacts on surrounding natural habitat. • No fire-wood may be collected in the veld without permission from the landowner. • Alien control and monitoring programme must be developed. • Visual inspections should be undertaken regularly to ensure environmental compliance. • If erosion is evident, proper erosion control measures should be implemented as soon as possible.					
Post construction phase and rehabilitation phase	• The alien control and monitoring programme used during the construction and operational phase must be carried over into the post construction and rehabilitation phase. • Erosion should be prevented as far as possible and attended to, as serious erosion may occur at barren areas. • Return and spread topsoil cover (to original depth) over rehabilitated area. • Vegetation should be allowed to re-establish naturally over disturbed area to be rehabilitated. • Areas which show no vegetation growth nine months after completion of the rehabilitation work, must be ripped, additional topsoil spread and seeded with indigenous grass species.					

1. VEGETATION DESTRUCTION						
Assessment						
Mitigation Status	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Local	Permanent	Very high	Definite	High	Negative
With Mitigation	Site	Long term	High	Definite	Medium	Negative
Recommendation						
Phase	**Description of recommendation**					
	• Species, especially grasses, trees and shrubs occurring in the region must be used to rehabilitate disturbed areas. • Keep animals away from the site, at least until the vegetation has re-established sufficiently.					

2. LOSS OF SOIL						
Assessment						
Mitigation Status	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Permanent	Medium	Definite	High	Negative
With Mitigation	Local	Long-term	Medium	Definite	Medium	Negative
Recommendation						
Phase	**Description of recommendation**					
General	• Please refer to the Specialist Reports in Appendix D for more recommendations					
Planning Phase	• No environmental mitigation measures is required during the planning phase on the proposed site, as no mitigation measures are to be implemented on site during the planning phase. • However, the engineers, specialists and environmental consultants took various factors into consideration, to be implemented during the construction / operational phase.					
Construction phase and operational phase	• Store stripped topsoil in an approved location and in an approved manner for later re-use in the rehabilitation process, for example: - Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events. - Stockpiles should not be higher than 1.5 m. - The gradient of stockpiles should not be greater than 1:1.5. • Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways. • Dust control measures will be implemented if nuisance dust generation occurs during the construction period. • All human movement and activities must be contained within designated construction areas and the planned site access road in order to prevent peripheral impacts on surrounding natural habitat. • Visual inspections should be undertaken regularly to ensure environmental compliance. • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis during the construction phase. • If erosion is evident, proper erosion control measures should be implemented as soon as possible.					

2. LOSS OF SOIL						
Assessment						
Mitigation Status	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Permanent	Medium	Definite	High	Negative
With Mitigation	Local	Long-term	Medium	Definite	Medium	Negative
Recommendation						
Phase	**Description of recommendation**					
Post construction phase and rehabilitation phase	• Erosion should be prevented as far as possible and attended to, as serious erosion may occur at barren areas. • Return and spread topsoil cover (to original depth) over rehabilitated area. • Vegetation should be allowed to re-establish naturally over disturbed area to be rehabilitated. • Areas which show no vegetation growth nine months after completion of the rehabilitation work, must be ripped, additional topsoil spread and seeded with indigenous grass species.					

3. POLLUTION CONTROL						
Assessment						
Mitigation Status	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Permanent	High	Definite	High	Negative
With Mitigation	Local	Long-term	Medium	Definite	Medium	Negative

Recommendation	
Phase	**Description of recommendation**
General	• Please refer to the Specialist Reports in Appendix D for more recommendations
Planning Phase	• No environmental mitigation measures is required during the planning phase on the proposed site, as no mitigation measures are to be implemented on site during the planning phase. • However, the engineers, specialists and environmental consultants took various factors into consideration, to be implemented during the construction / operational phase.
Construction phase and operational phase	• Visual inspections for the occurrence of pollution should be undertaken regularly. • Best practices should be implemented in the case of spillages / pollution / erosion. • No waste (general / construction / potential hazardous / etc.) may be dumped in the veld / water features. • Suitable waste bins etc. will be available on site for the temporary disposal of waste. • Waste will be removed from site and disposed of at an authorised landfill site. • DWS should be notified of any spillage / pollution within 24 hours of occurrence within water resources. • Record should be kept on site during the construction phase to indicate date of visual inspection, any spillages observed, and manner in which spill was treated. • Visual inspections should be undertaken at least every 6 months to investigate the occurrence of sedimentation and erosion. • Proper erosion mitigation measures should be implemented where necessary.
Post construction phase and rehabilitation phase	• Maintenance and repair will be undertaken when necessary. • All temporary infrastructure related to the construction phase will be removed from site. • Temporary concrete surfaces (if any) will be removed and compacted areas ripped. • No waste will be dumped on site and any waste occurring on site will be removed and disposed of according to best practices.

4. LOSS OF ANIMAL LIFE						
Assessment						
Mitigation Status	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Local	Permanent	Medium	Definite	High	Negative
With Mitigation	Local	Long-term	Medium	Definite	Medium	Neutral
Recommendation						
Phase	**Description of recommendation**					
General	• Please refer to the Specialist Reports in Appendix D for more recommendations					
Planning Phase	• No environmental mitigation measures is required during the planning phase on the proposed site, as no mitigation measures are to be implemented on site during the planning phase. • However, the engineers, specialists and environmental consultants took various factors into consideration, to be implemented during the construction / operational phase.					
Construction phase and operational phase	• No animals may be captured / harmed / killed on site. • Specialists should be appointed to remove / translocate species, if required. The necessary permits should also be obtained. • Any occurrences of harmed animals should be reported to the ECO, the required steps should be taken and should be recorded as such.					
Post construction phase and rehabilitation phase	• No animals may be captured / harmed / killed on site. • Specialists should be appointed to remove / translocate species, if required. The necessary permits should also be obtained. • Any occurrences of harmed animals should be reported to the ECO, the required steps should be taken and should be recorded as such.					

5. Surface Water						
Assessment						
Mitigation Status	**Extent**	**Duration**	**Intensity**	**Probability**	**Significance**	**Status**
Without Mitigation	Regional	Permanent	Medium	Definite	High	Negative
With Mitigation	Local	Long-term	Medium	Definite	Medium	Neutral
Recommendation						
Phase	**Description of recommendation**					
General	• Please refer to the Specialist Reports in Appendix D for more recommendations					
Planning Phase	• No environmental mitigation measures is required during the planning phase on the proposed site, as no mitigation measures are to be implemented on site during the planning phase. • However, the engineers, specialists and environmental consultants took various factors into consideration, to be implemented during the construction / operational phase.					
Construction phase and operational phase	• Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • The necessary authorisations (altering and impeding of beds / banks of water sources) should be obtained from DWS should any natural waterways be impacted upon. • Daily inspections for the occurrence of surface water pollution and soil pollution are to be undertaken, during the construction phase. • Best practices should be implemented in the case of spillages / pollution / erosion at the waterways.					
Post construction phase and rehabilitation phase	• Disturbed waterways (if any) should be rehabilitated according to best practices. • All polluted areas should be cleaned as soon as possible. • Waste to be removed from site.					

6. VISUAL IMPACT

The visual impact of the proposed development in the landscape is the function of several factors of which the viewing distance, visual absorption capacity and landform are measurable. Other factors are difficult to categorize because they are subjective viewpoints.

The visual impact for the proposed development is largely due to:
- The topography in terms of elevation and aspect;
- The vegetative cover in terms of its extent and height;
- The extent of the proposed development;
- Distance from point of origin; and
- The low visual absorption capacity of the surrounding landscape.

Factors of visual impact

Visual character:
The visual character of an area has different elements that provide an overall perceived ambience. In the consideration of the visual character of a site, it is important to include not only the internal land use but that of the surrounding land as well.

At this site, the visual character is mainly the town of Lutzburg. The existing cemetery, church as well as agricultural activities are also located within viewing distance of the site.

Scale of landscape:
Visual scale is the apparent size relationships between landscape components and their surroundings (Smardon, et al. 1986).

Visual analysis:
In this section the intensity of the visual impact of the development on the surrounding area is described. Aspects such as viewshed, visual absorption capacity and the appearance of the development from critical viewpoints will be used to determine this impact.

The proposed construction of a new graveyard is situated in a natural area but is in close proximity to the town of Lutzburg, as well as the existing cemetery.

Site evaluation in terms of visual impact

Visual assessment ratings rates each criterion listed in the table from, high, medium to low according to specific characteristics of those criteria.

Visual assessment criteria used to determine the degree of visual impact of the proposed activities on the environment (adapted from Klapwijk 1998)			
CRITERIA	**HIGH**	**MEDIUM**	**LOW**
Visibility	Very visible from many places beyond 1km	Visible from within 1km zone but partially obscured by intervening objects	Only partially visible within the 1km zone and beyond due to screening by intervening objects
Visual quality	A very attractive setting	A setting with some aesthetic and visual merit	A setting which has little aesthetic merit
Visible man-made structures	Buildings as a dominant visual element	Buildings as a partial visual element	Buildings as a minor visual element
Surrounding landscape compatibility	Cannot accommodate proposed development without appearing totally out of place.	Can accommodate the proposed development without appearing totally out of place	Usually suits or matches the proposed development
Character of site or surrounding area	Exhibits a definite character	Exhibits some character	Little or no character
Contrast between human scale and vertical & horizontal	There is high contrast	Landscape with some contrast	Limited vertical variation. Most elements are related to human and horizontal

Visual assessment criteria used to determine the degree of visual impact of the proposed activities on the environment (adapted from Klapwijk 1998)			
CRITERIA	**HIGH**	**MEDIUM**	**LOW**
elements in the landscape			scale
Visual absorption capacity (VAC)	Inability of landscape to visually absorb a development because of a limited vegetation cover, flat slope and uniform texture	The lower ability of the landscape to visually absorb the development due to less diverse landform, vegetation & texture	The ability of landscape to easily accept visually a particular development because of its diverse landform, vegetation and texture
View distance (uninterrupted)	More than 5km	Between 5km & 1km	Between 1km & 500m
Critical views	Views of the development are to be seen by many people passing on road routes and from prominent areas	Some views of the development from surrounding routes and housing	Limited views to the development from roads and housing

Results and conclusions on visual impact of development assessment

Aspect	Result
Visibility	HIGH
Visual quality	MEDIUM
Visible man-made structures	MEDIUM
Surrounding landscape compatibility	MEDIUM
Character of site or surrounding area	MEDIUM
Contrast between human scale, vertical & horizontal elements in the landscape	MEDIUM
Visual absorption capacity (VAC)	MEDIUM
View distance (uninterrupted)	MEDIUM
Critical views	MEDIUM

The proposed development will have a medium visual impact. This is largely due to:

- The extent of the development
- The surrounding agricultural as well as residential areas, the locality of the existing cemetery.

APPENDIX G

Environmental Management Programme (EMPr)

ENVIRONMENTAL MANAGEMENT PROGRAMME

The proposed construction of a new cemetery Lutzburg, Northern Cape Province

Proponent: Kai !Garib Local Municipality
MDA Ref No: 40900
Date: March 2022

Town & Regional Planners,
Environmental & Development
Consultants

Physical Address: 9 Barnes Street,
Westdene, Bloemfontein, 9301
Postal Address: PO Box 100982,
Brandhof, 9324
Tel: 051 4471583, Fax: 051 448 9839
E-mail: admin@mdagroup.co.za

1. INTRODUCTION

1.1 Project and associated construction activities

The proposed project entails the construction of a new cemetery at Lutzburg.

Please refer to the map in Appendix A of the Basic Assessment Report for an indication on the locality of the proposed activities.

1.2 Objectives of the EMPr

The EMPr aims to fulfil the requirements in terms of the National Environmental Management Act (Act 107 of 1998), with the following objectives:

- To identify, predict and evaluate actual and potential impacts on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits and promoting compliance with the principles of environmental management;
- To identify and employ the modes of environmental management best suited to ensuring that the activity is pursued in accordance with best environmental management practices;
- To be able to respond to unforeseen events; and
- To provide feedback on compliance.

1.3 Implementation of the EMPr

The proponent, namely Kai !Garib Municipality is responsible for the implementation of the EMPr. All contractors should be supplied with a copy of the EMPr and should ensure that construction staff adheres to the mitigation measures.

2. PREPARATION OF THE EMPR

2.1 Person(s) who prepared the EMPr

i) Mr Neil Devenish
ii) Me Hanlie Stander

MDA
P.O. Box 100982
Brandhof

Bloemfontein
9324
Tel: 051 447 1583
Fax: 051 448 9839

2.2 Expertise of the person(s) who prepared the EMPr

i) Mr Neil Devenish

Key qualifications:
- Key competencies and experience include development control applications (applications and appeals pertaining to rezoning, consolidations, subdivisions etc.) township establishment applications, environmental management and control applications.

Education:
- B. A. (Sociology, Geography) University of the Free State, SA, 1994
- Master of Town and Regional Planning, University of the Free State, SA, 1996
- Managing the Environmental Impact Assessment Process, Environmental Management Unit, PU for CHE, 2000
- Environmental Management Consulting, South African Institute of Ecologists & Environmental Scientists, 2001
- Water Law of South Africa, The South African Institution of Civil Engineers (SAICE), 2006

ii) Me Hanlie Stander

Key qualifications:
- Key competencies and experience include environmental management and research in zoology and environmental management.

Education:
- B.Sc. (Zoology), University of the Free State, South Africa, 2005
- B.Sc. Honors (Zoology), University of the Free State, South Africa, 2006
- M.Sc. (Zoology), University of the Free State, South Africa, 2012

3. RECOMMENDED MANAGEMENT AND MITIGATION MEASURES

ECO - Environmental Control Officer / IECO - Independent Environmental Control Officer / SO - Safety Officer

SUMMARY OF RECOMMENDED MANAGEMENT AND MITIGATION MEASURES

ECO - Environmental Control Officer / IECO - Independent Environmental Control Officer / SO - Safety Officer

Compliance and Monitoring			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
Record keeping of compliance and monitoring reports	**Direct impacts:** • Non-conformance	High Negative	• The applicant will ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction. • An Environmental Control Officer (ECO) will be appointed to monitor the construction phase. Note that the ECO may be appointed separately or can be part of the contractor's team. • Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended. • Inspections should be documented, and any shortcomings addressed immediately. • A report will be provided by the independent ECO to the contractor upon completion thereof. The findings thereof should be made available to the competent authority (for example NC DENC, DWS), should it be requested. • Any emergency or unforeseen impact will be reported to the relevant environmental department within 24 hours after identification for telephonic approval and will be confirmed in writing. • Material Safety Data Sheets (MSDS) should be available on site. Where possible and available, MSDS should include information on ecological impacts and measures to minimize negative
	Indirect impacts: • Non-conformance	High Negative	
	Cumulative impacts: • Non-conformance	High Negative	

Compliance and Monitoring			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			environmental impacts during accidental releases or escapes. • Procedures in the MSDS should be implemented in case of an emergency. • The following documents should be available on site, and made available to the competent authority on request (if applicable): - Complaints Register - Environmental Incident Register - Disposal Certificates of Waste and Wastewater Generated during the construction / operational phase - Environmental Monitoring (Audit) Reports - Written Corrective Action Instructions - Environmental Authorisation - DWS Permit / License - Blasting Permit - Removal / Transplantation of protected species permits - EMPr

Planning and Design phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
Planning and design	**Direct impacts:** • None	Medium – High Negative	• No environmental mitigation measures are required during the planning phase on the proposed site, as no mitigation measures are to be implemented on site during the planning phase. • However, the applicant, engineers, environmental consultants and specialists should take the following steps during the planning phase: - Permits will be obtained for the removal / transplantation of protected species that are located within the construction area where no alternatives are possible (if any). - A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction phase. - The necessary Environmental Authorisation will be obtained before any activities listed in the Regulations are undertaken. - In addition, the necessary DWS registrations will be obtained, before any construction activities near watercourses are undertaken. - The necessary precautions regarding road safety will be implemented for construction work to be undertaken within road crossings (if any). - Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken. - A blasting permit will be obtained before blasting
	Indirect impacts: • None	Medium – High Negative	
	Cumulative impacts: • None	Medium – High Negative	

Planning and Design phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			activities is undertaken (if any). - The design and layout of the proposed project will take the possibility of flooding, erosion and pollution into consideration. - The Contractor must acquire a permit, issued by the relevant heritage resources authority, in the instance that any destruction, damage, excavation, alteration, defacing or any other disruption are to take place to any archaeological material (including infrastructures older than 60 years).
	Note: • Should the above not be taken into consideration during the Planning and Design Phase, the environmental impacts associated with the construction and operation phase will be of high significance as the environment will possibly be negatively affected.		

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
General measures to consider	**Direct impacts:** • Loss of vegetation • Loss of animal life • Erosion • Pollution • Noise • Nuisance dust	Negative	• Any construction is disruptive, and the environment must be given consideration with every activity undertaken. • All relevant standards relating to legislation should be adhered to (including waste emissions, waste disposal, noise regulations, etc.) • According to Section 28 of the NEMA Act 107, every person who cause, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring and if it can't be avoided or stopped, to minimize and rectify such pollution or degradation of the environment. • The pollution control provision in Section 19(1) of the National Water Act (Act 36 of 1998) should be adhered to at all times. • ECO should be provided with a layout of the site, indicating the position of the following prior to the site establishment, for acceptance: - Ablution Facilities - Storage Areas - Ready-mix Areas - Stockpile Areas - Waste Disposal Facilities - Hazardous Substances Storage Area
	Indirect impacts: • Possible outbreaks of fire • Pollution (groundwater, surface water, soil and air) • Erosion • Loss of biodiversity (vegetation & animal life) • Nuisance dust	High Negative	
	Cumulative impacts: • Possible outbreaks of fire • Pollution(groundwater, surface water, soil and air) • Erosion • Loss of biodiversity	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	(vegetation & animal life)		- Etc. • Designate the boundaries of the active construction start-up site, by erecting fencing / danger tape (where applicable). • Fence off operational footprint area (if possible) to ensure all operational activities are contained within the designate area. • All construction and operational activities must be contained within the demarcated construction area as determined in consultation with the ECO. • Care will be taken to prevent unnecessary damage to vegetation near to construction activities. • The necessary precautions regarding road safety will be implemented for construction work within road crossings (if any). • Proper sanitation, water and waste facilities will be in place for construction workers throughout the construction phase. • Chemical toilets will be cleaned and serviced regularly and proof thereof will be available on site. • Potable water will be made available daily to workers on site. • Fire-fighting equipment will be available on site, where applicable.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• If artefacts or graves are uncovered during construction activities, work in the immediate vicinity will be stopped until the project Archaeologist and SAHRA has been consulted. • Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting activities. • All relevant IAPs will be notified 24 hours prior to any known potential risks associated with the site and the activities to be undertaken on site.
Site access	**Direct impacts:** • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination	Medium Negative	• The current access road to the existing cemetery should be improved, when required. • Proper storm water measures are to be implemented to avoid run-off of water and washing of sand / soil onto the road. • Erosion measures will be implemented. • Removal of vegetation will be kept to the required area. • No animals will be hunted / captured on site (only to be undertaken by a relevant specialist).
	Indirect impacts: • Loss of vegetation • Loss of animal life • Erosion • Surface water contamination	High Negative	
	Cumulative impacts: • Loss of vegetation • Loss of animal life • Erosion	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Surface and groundwater contamination		
Employee conduct on site	**Direct impacts:** • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects	Medium Negative	• No animals may be harmed / captured / trapped and / or hunted. This must be strictly enforced. • Animals found at the construction site will be removed and relocated to an appropriate area, by a suitable, qualified person. • No open fires allowed. Provision will be made that no accidental fires are started. • No firewood will be collected on site or in surrounding areas, without written approval from the landowner. • No smoking or open fires will be allowed near storage facilities. • No waste may be dumped on site. • Employees should make use of the ablution facilities provided.
	Indirect impacts: • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects • Fire outbreaks	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Cumulative impacts: • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects • Fire outbreaks	High Negative	
Soil, erosion and vegetation management	**Direct impacts:** • Destruction of vegetation • Loss of topsoil • Loss of vegetative species of conservational concern • Noise elevation due to construction activities • Nuisance dust generation • Visual impact of rock and spoil material	Medium Negative	• Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily. • Access roads must be non-erosive, structurally stable and not induce flooding / safety hazard. • If any access road is impaired, it will be repaired immediately to prevent any future / further damage. • All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	dumps		natural habitat. • Erosion management is important. Rehabilitation measures must be monitored to ensure that no erosion occurs and the disturbed should be adequately re-vegetated. • Concurrent rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation. • Stockpiled soil will be stockpiled in an area where it will not be disturbed by vehicles. • Stockpiled soil will be protected from washing away during rainstorms. For example: - Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events. - Stockpiles should not be higher than 1.5 m. - The gradient of stockpiles should not be greater than 1:1.5. • Stockpiles should be located away from drainage lines, watercourses and areas of temporary flood • All soil excavated is to be separated into top- and subsoil. Subsoil must be used for backfilling and topsoil for landscaping and rehabilitation of disturbed areas. • Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil should be of a sufficient
	Indirect impacts: • Erosion • Establishment of alien / invader vegetation species • Possible impact on heritage artefacts • Loss of fauna on site.	Medium Negative	
	Cumulative impacts: • Erosion • Establishment of alien vegetation species	Medium Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			depth. • Fertilizers should be used where topsoil and subsoil was mixed or not up to original standard. • Indigenous tree species in the vicinity of the operational site should be marked with danger tape. Disturbance to such species should be avoided, where possible • A permit for the removal of protected plant species will be obtained before the removal of these species (if any) are undertaken. • An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase. • Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof. • Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed immediately. • Fire fighting equipment will be available on site. • Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• Compacted soils (such as dirt tracks not to be utilised during the operational phase) must be ripped to ensure the establishment of natural occurring vegetation. • Concurrent rehabilitation should be undertaken, where possible. • Vegetation clearance will be limited to the required area. • Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways. • Dust control measures will be implemented if nuisance dust generation occurs during the construction period. • All archaeological findings (if any) should be recorded and reported to SAHRA. No construction activities in the area may proceed without the authorisation from SAHRA. • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis. • No animals may be captured (only by specialist) / harmed / killed on site. • Any occurrences of harmed animals should be

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			reported to the ECO and recorded as such.
Minimise contamination and sterilisation of soil	**Direct impacts:** • Slow regrowth of natural occurring vegetation during the rehabilitation phase • Loss of vegetation • Contaminated soil	Medium Negative	• Use of potentially polluting and hazardous substances should be strictly controlled. • If soil is significantly contaminated by hazardous substances, then this soil is considered as hazardous and should be disposed of according to best practices. • Repair / maintenance will be conducted on site, and impacts like oil spills should be appropriately mitigated. Spill response procedures must be clearly defined and well known by all staff. • All threatened or protected plant species as specified by the NEM: Biodiversity Act (2004) will be identified on site. Permits are required for the removal / transplantation of these plants.
	Indirect impacts: • Loss of vegetation • Loss of animal life • Establishment of alien vegetation • Erosion	High Negative	
	Cumulative impacts: • Loss of vegetation • Loss of animal life • Establishment of alien vegetation • Erosion	High Negative	
Construction of graves	**Direct impacts:** • Visual impact of rock and spoil material dumps from graves excavation • Noise elevation due to	Medium – High Negative	• Site will be kept neat and tidy. • Appropriate area will be identified as a stockpiling area. • Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways.

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	construction activities • Nuisance dust generation		• Dust control measures will be implemented if nuisance dust generation occurs during the construction period. • Stockpiled material will be stored in such a way to limit the loss thereof. For example: - Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events. - Stockpiles should not be higher than 1.5 m. - The gradient of stockpiles should not be greater than 1:1.5. • Noise control measures will be implemented. • All employees will be provided with the correct PPE. • Establishment of alien / invader vegetation will be monitored and these species will be removed by hand or by an approved chemical before gestation thereof. • All archaeological findings (if any) should be recorded and reported to SAHRA. No construction activities in the area may proceed without the necessary authorisation from SAHRA. • Storm water measures will be implemented in order to manage storm water, and this will also prevent erosion. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis.
	Indirect impacts: • Erosion • Establishment of alien / invader vegetation species • Possible impact on heritage artefacts • Loss of fauna on site	Medium – High Negative	
	Cumulative impacts: • Erosion • Establishment of alien vegetation species	Medium – High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• No animals may be captured (to be undertaken by a specialist) / harmed / killed on site. • Any occurrences of harmed animals should be reported to the ECO and recorded as such.
Ablution Facilities	**Direct impacts:** • Pollution of surface water runoff • Pollution of soil	Negative	• No open areas or the surrounding vegetation may be used as 'toilet facilities. • Toilets should be available for all employees. Where waterborne sewerage is not available, the ECO must designate an area within the boundaries of the site for the erection of portable chemical toilets. • Toilet facilities shall occur at a minimum ration of 1 toilet per 15 employees. • Toilets shall be maintained in a hygienic state and serviced when required. • Temporary toilets should be serviced regularly and the contents be removed to a licensed disposal facility.
	Indirect impacts: • Pollution of surface water runoff • Pollution of soil • Pollution of groundwater • Odour • Unnatural enrichment of soil • Promotion of unnatural vegetation growth	Medium Negative	
	Cumulative impacts: • Pollution of surface	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	water runoff • Pollution of soil • Pollution of groundwater • Odour • Unnatural enrichment of soil • Promotion of unnatural vegetation growth		
Safeguard water resources	**Direct impacts:** • Contamination of surface water resources	High Negative	• No activities will be undertaken within 32 m of a watercourse / within the 1:100 year floodline / 500m of a wetland, without the necessary authorisations (for example from NC DENC and DWS). • Caution will be taken to ensure that construction materials are not dumped or stored within storm water management systems. • Construction activities in the storm water infrastructure will be limited through proper demarcation and appropriate environmental awareness training. • The Contractor is responsible to inform all staff of the need to be vigilant against any practice that will have a harmful effect on waterways. • Infilling, excavation, drainage and hardening of
	Indirect impacts: • Erosion • Change in flow of water course • Pollution (surface water, groundwater and soil)	High Negative	
	Cumulative impacts: • Erosion • Change in flow of water course • Pollution (surface	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	water, groundwater and soil)		surfaces will not occur unnecessarily in storm water infrastructure. • Emergency plans will be in place in case of fuel spillages (to limit the occurrence of soil as well as groundwater pollution). • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction or operational phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills of any hazardous material be detected. • Weather forecasts from the South African Weather Bureau of up to three days in advance will be monitored on a daily basis to avoid exposing soil or construction works or materials during a storm event and appropriate action will be taken in advance to protect construction works should a storm event be forecasted. • All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO). • The design of drainage systems will ensure there is no contamination or eutrophication. • Drainage systems will be maintained regularly in order to minimize the runoff of harmful chemical

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			substances into the waterway(s). • It will be ensured that the construction activities have minimal effects on the flow of water through the storm water infrastructure. • No erosion or siltation may occur due to any construction or operational activities. • Occurrence of erosion will be monitored. Reparations will be undertaken as soon as possible.
Workings within / near to watercourses	**Direct impacts:** • Temporary blockage of water • Loss of vegetation • Loss of aquatic animal life • Erosion • Scouring	Medium – High Negative	• Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Construction activities in waterways should be undertaken in such a manner that no containment of water is required, where possible. 2/3 of the waterways may be diverted at a time, if needed. • The necessary authorisations should be obtained from DWS. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis.
	Indirect impacts: • Ponding of water during construction at waterways (due to blockage of waterways). • Surface and groundwater pollution due to spillage of potential hazardous	Medium – High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	substances such as hydraulic material and untreated sewage explained above. • Impact on waterways (including the natural habitat of the area), soil disturbances and including pollution. • Possible change of flow of water in waterways. • Erosion • Scouring • Loss of biodiversity		
	Cumulative impacts: • Erosion • Loss of vegetation • Scouring • Possible change of flow of water in waterways • Loss of biodiversity	High Negative	
Handling of waste / Waste Management	**Direct impacts:** • Spillage of material to be utilised during the	Medium – High Negative	• The contractor is responsible for the removal of construction waste. • Suitable containers (weather and vermin proof) will

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
(Note that waste refers to all construction debris and domestic waste generated due to construction activities.)	construction phase as well as untreated sewage to the surrounding environment • Dumping of construction rubble and general waste on site		be placed on site to collect all solid waste. These will be emptied regularly. • No littering is permitted. During the construction and operational phase the site will be maintained in a neat and tidy condition. • All solid waste produced will be disposed of at an authorized landfill site. Recyclable waste may also be sold to recycling contractors. • No dumping, burning or burying of waste will be undertaken on site. • All hazardous waste will be disposed of at an authorized hazardous landfill site. • Recyclable hazardous waste will be re-used or sold to recycling contractors, where possible. • A waste management plan will be compiled and designed to ensure adequate waste management activities. • Areas used for waste storage and loading of materials should be lined and bund walls have to be erected to contain any spills that might occur. • Waybills providing evidence of correct disposal procedure must be provided for the ECO's inspection. • Waste classification should be undertaken. • Visual inspections for the occurrence of pollution should be undertaken daily.
	Indirect impacts: • Surface and groundwater pollution due to spillage of potential hazardous substances such as hydraulic material and untreated sewage. • Impact on waterways (including the natural habitat of the area), including pollution. • Pollution of soil	Medium – High Negative	
	Cumulative impacts: • Pollution of downstream	Medium – High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	watercourses • Pollution of soil • Pollution of groundwater • Air pollution		• Spills should be cleaned up immediately according to best practices. • DWS should be notified of any spillage / pollution of water sources (groundwater and / or surface water) within 24 hours of occurrence. • Record should be kept on site to indicate date of visual inspection, any spillages observed, and manner in which spill was treated.
Health, safety and security	**Direct impacts:** • Road safety at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry	Medium Negative	• Site should be fenced / marked with danger tape, where possible. • The contractors will comply with the Occupational Health and Safety Act, National Building Regulations and any other national, regional or local regulations with regard to safety on site. • Construction contracts will include safety and security measures for staff. • Precautions to ensure that construction staff and sites are visible and proper PPE will be provided to all employees. • Suitable warning and information signage should be available at the storage facilities. In addition, telephone numbers of emergency services (including local firefighting services) must be posted conspicuously on site. • Employees should be made aware of the health risks associated with any hazardous substances /
	Indirect impacts: • Loss of vegetation and animal life due to possible fire outbreaks • Road safety issues at road crossings • Injuries on site • Health issues on site (for example, due to	Medium Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	pollution) • Unauthorised entry		dangerous goods used or stored on site. This includes soil that was contaminated with oil or diesel, etc. • Employees should receive relevant safety training in handling of hazardous substances / dangerous goods associated with the proposed project. • Construction work within road reserves will accommodate road users as far as possible. This includes the following: - Roads will be crossed in half widths at a time to minimise the impact on vehicular traffic, where possible. - Construction along and across existing roads will be executed in such a manner that both pedestrian and vehicular traffic is accommodated at all times. - The contractor will be required to maintain adequate access to all public and private property at all times. - Contractor will supply, erect and maintain road signs for all work areas conforming to the prescribed layout and requirement of the South African Road Traffic Signs Manual and other relevant notices. • Fire extinguishers will be available on site and in the construction camp (if any).
	Cumulative impacts: • Loss of vegetation and animal life due to possible fire outbreaks • Road safety issues at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry	Low Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			• The contractor will be required to maintain adequate access to all public and private property at all times. • Speed limits of 20km/h will be enforced. • All relevant IAPs will be notified prior to any blasting activities. • All relevant IAPs will be notified 24 hours prior to any known potential risks associated with the site and the activities to be undertaken on site. • The necessary precautions with regard to road safety will be implemented for construction work within road crossings. • All injuries should be recorded.
Heritage	**Direct impacts:** • Harm to unknown heritage resources	Negative	• In the case of the discovery of any heritage, archaeological or palaeontological significance, the work in the area will be stopped and reported to the archaeologist and SAHRA. Any construction activities in the nearby vicinity may only commence after approval is obtained from SAHRA as well as the ECO. • If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to
	Indirect impacts: • Loss of heritage resources	High Negative	
	Cumulative impacts: • Loss of heritage resources	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA • Known heritage resources (if any) must be avoided as far as possible. • Employees should be encouraged and informed of the need to be on the look-out for potential fossils / buried archaeological material. • In the case of the discovery of any stone tools or other archaeological or palaentological material, the work in the immediate vicinity should temporarily cease and reported to the archaeologist and SAHRA. Should any human remains be exposed, the archaeologist as well as the local SAPS should be notified. • If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt / Phillip Hine; 021 462 5402) must be alerted. If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqalabutho Madida

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			012 320 8490), must be alerted immediately. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule. • If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA; • Appropriate measures should be undertaken by the ECO until the archaeologist / SAPS visits the site. This should include the following: – Site should be fenced with 'danger tape' – Position of finding should be recorded – Depth of finding should be recorded

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			– Digital image of the finding should be taken – No information on the findings may be made public without the consent of the archaeologist / SAPS. – Construction activities in the area may only continue after approval from the archaeologist and SAHRA. –
Noise and dust control	**Direct impacts:** • Elevation of noise levels • Generation of nuisance dust	Negative	• Construction activities will be limited to normal daytime hours, where possible. • Noise levels will be kept as low as possible during the construction phase in order not to disturb adjacent landowners. • Proper mitigation measures will be implemented to limit noise (e.g. the installation of silencers, where required). • Proper mitigation measures will be implemented to limit the formation of dust (e.g. wetting of construction area, when required). • The speed of the construction vehicles will be limited to avoid dangerous conditions, the formation of dust and the excessive deterioration of roads being used.
	Indirect impacts: • Air pollution • Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / occupants	Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	Cumulative impacts: • Air pollution • Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / occupants	Negative	
Handling and Storage of materials	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• All chemicals used during the development, including fuel, will be stored in a proper storeroom or protected area to prevent pollution. • Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere. • Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary. • Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground. • All environmental problems occurring on the site
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Injuries • Health issues		such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment. • Spill response equipment must be available during the handling and loading of hazardous waste (if any) • Hazardous substances are to be stored in bunded areas. • Bund walls will have a capacity of at least 110% of the total capacity of the stored volume. • No oil, diesel or other chemicals may be spilled or discharged anywhere and contact with bare soil should be avoided at all cost. • Drip trays will be used during the servicing of vehicles as well as the transfer of chemicals / substances from transportation vehicles. • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected. • Material stockpiles must be stable and well secured to avoid collapse and possible injury. • Material and Safety Data Sheets (MSDSs) should be
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
			readily available on site for all hazardous materials. MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. • Storage areas should be kept clean and free from any accumulation of combustible matter (such as paper) and any possible source of ignition should be removed.
Hazardous waste management	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Hazardous wastes must be separated from general wastes, stored within secondary containment in appropriate containers. • Proper storage facilities for the storage of hazardous / dangerous goods must be provided to prevent the migration of spillage into the soil and or groundwater. • Certificates / waybills of hazardous waste disposals are to be available on request as well as auditing purposes. This includes the removal of soil contaminated with hydrocarbons. • Storage of hazardous substances and refuelling areas are to be bunded with an impermeable liner to protect groundwater quality and must comply with the relevant SANS codes. • Areas used for the storage of hazardous materials are to be clearly indicated as such.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Health issues		
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
Hazardous and Flammable materials: Delivery	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• All deliveries (especially of hazardous nature) must be supervised. • Subcontractors and delivery companies should be informed of the delivery procedures and made aware of restrictions as to where materials may be stored. • Loads must be secured to prevent spillage during transportation thereof. • Hazardous substances are to be transported in sealed drums or bags.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	groundwater pollution • Injuries • Health issues		
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
Hazardous and Flammable materials: Cement and / or concrete mixing	**Direct impacts:** • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Limit cement and concrete mixing to single sites, where possible. • No mixing allowed directly onto the ground. • All visible remains of excess material will be treated as hazardous waste. • Solid concrete waste may be treated as inert construction rubble. However, wet cement, liquid slurry and cement powder must be treated as hazardous waste.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Air pollution • Surface and groundwater pollution • Injuries • Health issues		
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
Hazardous and Flammable materials: Gas Storage	**Direct impacts:** • Air pollution • Fire outbreaks • Injuries • Health issues	High Negative	• All combustible materials are to be store at least 3 m from any gas storage areas. In case of any flammable or any other gas storage areas, open flames, welding and cutting operations, smoking, etc. shall be prohibited in or near the storage area. • No gas will be delivered until the site is registered with local Fire Safety. • Cylinders should always be stored in a well-ventilated area away from spark, flames or any source of heat or ignition. • Cylinders should always be handled, stored, used
	Indirect impacts: • Air pollution • Fire outbreaks • Injuries • Health issues	High Negative	
	Cumulative impacts:	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Air pollution • Fire outbreaks • Injuries • Health issues		and transported in an upright position. It should not be dropped, dragged or rolled on their sides or allowed to skid. Cylinders that are too large to be carried shall be tilted and rolled on the rims of their foot rings or bases. • Valves should be kept properly closed
Hazardous and Flammable materials: Chemicals, Grease and Oil Storage	**Direct impacts:** • Soil pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Storage areas must be bunded and hard surfaced in order to protect groundwater quality • Compliance with SANS codes and hazardous substances bylaws should be adhered to • All lids must be properly sealed / closed to prevent Volatile Organic Compounds (VOCs) and other potentially harmful gaseous compounds from escaping.
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Soil pollution • Surface and groundwater pollution • Injuries • Health issues		
Hazardous and Flammable materials: Hydrocarbon spillages	**Direct impacts:** • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	• Spill kits are to be made permanently available at areas which have the potential to be subjected to spillage of hazardous substances and dangerous goods. • Remediation of spillages must be conducted immediately and closed out within 24 hours. • No waste water or waste will be disposed of into the surrounding environment at any time. Water collected in bunded areas must be collected in containers and disposed of as hazardous waste. • Machinery will be kept maintained in line with manufactures specifications to minimise the risk of hydrocarbon spillages. • An incident reporting system will be implemented in order to ensure incidents, where spillages has occurred, are closed out and appropriate measures are taken to prevent further incidents. • Incidents must be reported to DWS within 24 hours. • Contaminated soil must be disposed of in a hazardous materials skip and removed to a licensed hazardous landfill facility by a licensed
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and	High Negative	

Construction phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	groundwater pollution • Injuries • Health issues		contractor. • Contaminated water must be decanted into drums and stored until disposal by a registered waste transported is undertaken.

Operational phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
This phase consists of the use of the cemetery	**Direct impacts:** • Deterioration of the infrastructure in the long term. • Reach its capacity	Medium – Low Negative	• Maintenance and repair will be undertaken on the infrastructure when necessary. • Soil erosion occurrences will be attended to immediately. • Establishment of alien vegetation will be monitored and alien species will be removed by hand or by an approved chemical before gestation thereof. • Proper monitoring of various aspects (such as monitoring of the potable water quality should the potable water not be obtained from the municipal supplies) should be undertaken on a regular basis. • An emergency plan should be developed in case the potable water does not conform to the DWS standards.
	Indirect impacts: • Establishment of alien / invader species due to previous disturbance will also be associated with this phase. • Erosion • Illegal digging of new graves outside cemetery boundaries • Plundering of graves & cemetery in general	Medium – Low Negative	
	Cumulative impacts: • Establishment of alien / invader species due to	Medium – Low Negative	

Operational phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	previous disturbance will also be associated with this phase. • Erosion • Illegal digging of new graves outside cemetery boundaries • Plundering of graves & cemetery in general		

Decommissioning phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
It is not anticipated that the proposed project will cease in the nearby future. However, if decommissioning is decided upon, a rehabilitation plan will be developed and submitted for approval. The end-use of the area will be kept in mind during the compilation of the rehabilitation plan. Activities associated with the decommissioning phase discussed in this document will be limited to the rehabilitation of areas disturbed during the construction phase.	**Direct impacts:** • Rehabilitation of disturbed area • Re-vegetation • Limit occurrence of erosion • Proper stormwater control • No ponding on site • Limit visual impact	Medium Positive	• Temporary structures and office sites (if any) will be dismantled and removed after completion of the construction phase of the project. • All waste, equipment, materials, etc. used during construction will be cleared from the site. The contractors will ensure that the site is cleared and rehabilitated to the satisfaction of the ECO. • An alien plant control and monitoring programme will be implemented. • Re-vegetation of disturbed areas will be undertaken with site indigenous species. Hydro-seeding will be implemented if the establishment of natural occurring vegetation does not occur within reasonable time. • Temporary concrete surfaces (if any) will be removed and compacted areas ripped. • The establishment of natural occurring vegetation will be encouraged at disturbed areas. Hydro-seeding will be undertaken if natural regrowth is insufficient. • Establishment of extensive alien species will be monitored.
	Indirect impacts: • Rehabilitation of disturbed area	Medium Positive	
	Cumulative impacts: • Rehabilitation of disturbed area	Medium Positive	

Decommissioning phase			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
All disturbed areas will be rehabilitated according to best practices.			

No-go Option			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
Keeping the status quo – limited burial spaces will be available to the community	**Direct impacts:** • No direct environmental impacts.	N/A	• Patrolling should be implemented by the municipality to ensure that no illegal graves are constructed onto adjacent properties.
	Indirect impacts: • Community members will have to bury their loved ones at a cemetery in neighbouring towns (if space are available) • The above is a costly alternative to the community members. • It should also be kept in mind that cemeteries of adjacent towns are also fairly full and therefore this option cannot be seen as a reasonable alternative.	High Negative	

No-go Option			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	• Community members will make use of adjacent property as an illegal cemetery.		
	Cumulative impacts: • Community members will have to bury their loved ones at a cemetery in neighbouring towns (if space are available) • The above is a costly alternative to the community members. • It should also be kept in mind that cemeteries of adjacent towns are also fairly full and therefore this option cannot be seen as a	High Negative	

No-go Option			
Activity	**Impact summary**	**Significance without mitigation**	**Proposed mitigation**
	reasonable alternative. • Community members will make use of adjacent property as an illegal cemetery.		

APPENDIX H

Environmental Awareness Plan

ENVIRONMENTAL AWARENESS PLAN

The proposed construction of a new cemetery Lutzburg, Northern Cape Province

Proponent: Kai !Garib Local Municipality
MDA Ref No: 40900
Date: May 2021

mda
Town & Regional Planners, Environmental & Development Consultants

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1. Background

The aim of the current document is to make all employees, contractors, visitors, etc. aware of specific issues related to their surroundings, including biotic and abiotic elements, such as land, soil, plants, animals, air, water, as well as awareness of the built, social and economic surroundings as well as the impacts that the proposed project have on the mentioned elements.

2. Objectives for Environmental Awareness

It is important that the employees understand how each action of the project may influence the environment. It is just as important that each person understand the management strategies as it ensures that the impact on the environment is kept to a minimum.

The Environmental Awareness Plan should be sufficient to make all those involved in the proposed project aware of the risks that may occur as well as the necessary mitigation required to minimise the risks involved.

2.1. Target Groups

The target groups can be summarised as the management, administrative and general employees, as well as contractors.

2.2. Roles and Responsibility

2.2.1. Top Management

- Provide resources to ensure that the environmental awareness plan is implemented.

2.2.2. Environmental Team

- Approve all environmental awareness activities.
- Accountable for ensuring adequate resources are allocated for the effective implementation of the environmental awareness plan.
- Responsible for providing strategic direction for effective implementation of the environmental awareness plan.
- Responsible for overall establishment and implementation of environmental awareness plan.

- Ensure that environmental activities and information is communicated to the employees and contractors.
- Implement and drive the environmental awareness plan.

2.2.3. Employees and Contractors

- Adhere to and co-operate with management strategies as set out in the environmental awareness plan.

3. Implementation

The induction workshop will be conducted in order to inform all personnel (as well as contractors) that will be working on site of the Environmental Awareness Plan. During the induction, the risks for all aspects will be explained and the appropriate management options will be discussed. Monitoring programmes will also be discussed in order to identify and monitor the proposed project's impact on the environment and to discuss various remediation actions, should any deterioration be observed.

All employees will attend an induction workshop prior to the construction phase in order to ensure that all risks and mitigation measures are discussed prior to the occurrence of potential impacts. The workshop should be repeated to all new employees / contractors on site.

3.1. Induction

The Environmental Awareness Program must be implemented to:

- Develop and implement environmental education activities for all employees
- Organise environmental awareness activities on site
- Participate in environmental education

The constitution of the Republic of South Africa (1996) gives everyone the right to:

(a) An environment that is not harmful to their health or well-being

(b) To have the environment protected for the benefits of present and future generations through reasonable legislation in order to:
   (i) Prevent pollution and ecological degradation
   (ii) Promote conservation
   (iii) Promote justifiable economic and social development while protecting our environment.

Therefore, those who may cause pollution or other environmental degradations must take reasonable preventative measures to:

(a) Investigate, assess and evaluate the impacts
(b) Inform and educate employees about environmental risks associated with their work and the manner in which their tasks must be performed in order to avoid causing pollution or environmental degradation.

The induction workshop will focus on activities that carry an environmental risk, actions to be taken to reduce these risks and procedures to be followed in the event of an incident.

Environmental goals & objectives and the benefit of achieving such goals will be discussed as part of the induction workshop.

3.2. In-house training

In-house training events will be organised with relevant employees. The points to be discussed at these events will be determined by the relevant department. In addition, employees will participate in determining what environmental issues and / or concerns are relevant to their specific occupation.

The environmental incident report will also be discussed at these sessions.

3.3. Training during construction phase

3.3.1. HoD Meetings

The General Manager communicates information to senior management on environmental issues and the information is minuted.

3.3.2. SHEQ Meetings

Environmental issues are to be discussed at each of the SHEQ meetings. The responsible person for each of the environmental issues should also be appointed.

3.4. On the job training

Expected environmental issues and concerns specifically related to their occupation will be discussed with employees throughout the construction phase. Employees will be trained on how to respond to such environmental impacts.

3.5. General training & skills development

Training in basic environmental and pollution control skills will be given to employees working on site.

4. Evaluation of the Environmental Awareness Plan

The ECO will evaluate the Environmental Awareness Plan throughout the construction, operation and closure phase.

Environmental Awareness Plan	
Objective / Environmental parameter: General measures to consider	
Risks	**Mitigation measures**
• Negative impact on Environment, such as pollution, degradation, loss of vegetation, etc. • Surface and groundwater pollution.	• Any construction is disruptive and the environment must be given consideration with every activity undertaken • All relevant standards relating to legislation should be adhered to (including waste emissions, waste disposal, noise regulations, etc.) • According to Section 28 of the NEMA Act 107, every person who cause, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring and if it can't be avoided or stopped, to minimize and rectify such pollution or degradation of the environment. • The pollution control provision in Section 19(1) of the National Water Act (Act 36 of 1998) should be adhered to at all times.

Environmental Awareness Plan	
Objective / Environmental parameter: Planning phase	
Risks	**Mitigation measures**
• Loss of protected fauna and / or flora. • Loss of natural occurring vegetation • Contamination of soil / water resources • No drinking water available to employees • Occurrence of veld fires • Loss of artefacts / heritage material • Damage to nearby infrastructure • Startle domestic and wild animals • Damage to nearby infrastructure • Undertaking unauthorised activities	• Permits will be obtained for the removal / transplantation of protected species (if any) that are located within the construction area where no alternatives are possible. • Care will be taken to prevent unnecessary damage to vegetation near to construction activities. • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages / groundwater pollution during the construction and operational phase. • The necessary Environmental Authorisation will be obtained before any activities listed in the Regulations (Regulations 982, 983, 984 and / or 985 of 2014) are undertaken. • In addition, the necessary DWS registrations will be obtained, before any construction activities are undertaken. • The necessary precautions with regard to road safety will be implemented for construction work to be undertaken within road crossings (if any). • Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken. • A blasting permit will be obtained before blasting activities is undertaken (if any).

Environmental Awareness Plan	
Objective / Environmental parameter: Construction phase - general	
Risks	**Mitigation measures**
• Loss of natural occurring vegetation • Contamination of soil / water resources No drinking water available to employees • Occurrence of veld fires Loss of artefacts / heritage material • Damage to nearby infrastructure • Startle domestic and wild animals • Damage to nearby infrastructure	• Care will be taken to prevent unnecessary damage to vegetation near to construction activities. • The necessary Water Use Authorisations will be available on site. • The necessary precautions with regard to road safety will be implemented for construction work within road crossings (if any). • Proper sanitation, water and waste facilities will be in place for construction workers throughout the construction phase. • Chemical toilets will be cleaned and serviced regularly and proof thereof will be available on site. • Potable water will be made available daily to workers on site. • Fire-fighting equipment will be available on site, where applicable. • If artefacts or graves are uncovered during construction activities, work in the immediate vicinity will be stopped until the project Archaeologist and SAHRA has been consulted. • Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting activities.

Environmental Awareness Plan	
Objective / Environmental parameter: Water resources	
Risks	**Mitigation measures**
• Erosion • Undertaking of unauthorised activities • Contamination of stormwater • Contamination of soil • Contamination of surface and / or groundwater resources • Ponding of stormwater	• No activities will be undertaken within 32 m of a watercourse / within the 1:100 year floodline, without the necessary authorisations (for example from NC DENC and DWS). • Caution will be taken to ensure that construction materials are not dumped or stored within storm water management systems. • Emergency plans will be in place in case of fuel spillages (to limit the occurrence of soil as well as groundwater pollution). • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages / groundwater pollution during the construction and operational phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills / groundwater pollution be detected. • During the construction phase, weather forecasts from the South African Weather Bureau of up to three days in advance will be monitored on a daily basis to avoid exposing soil or construction works or materials during a storm event and appropriate action will be taken in advance to protect construction works should a storm event be forecasted. • Construction activities in the storm water infrastructure will be limited through proper demarcation and appropriate environmental awareness training. The Contractor is responsible to inform all staff of the need to be vigilant against any practice that will have a harmful effect on waterways. • All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO). • Infilling, excavation, drainage and

Environmental Awareness Plan	
Objective / Environmental parameter: Water resources	
Risks	**Mitigation measures**
	hardening of surfaces will not occur unnecessarily in storm water infrastructure. • The design of drainage systems will ensure there is no contamination, eutrophication or increased. Drainage systems will be maintained regularly in order to minimize the runoff of harmful chemical substances into the waterway(s). • It will be ensured that the construction activities have minimal effects on the flow of water through the storm water infrastructure.

Environmental Awareness Plan	
Objective / Environmental parameter: Handling and Storage of materials	
Risks	**Mitigation measures**
• Contamination of stormwater, surface and or groundwater • Contamination of soil • Occurrence of veld fires	• All chemicals used during the development, including fuel, will be stored in a proper storeroom or protected area to prevent pollution. • Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere. • Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary. • Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground. • All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment. • Spill response equipment must be available during the handling and loading of hazardous waste (if any). • Hazardous substances to be stored in a bunded area. Bund walls will have a capacity of at least 110% of the total capacity of the stored volume. • No oil, diesel or other chemicals may be spilled or discharged anywhere and contact with bare soil should be avoided at all cost. • Drip trays will be used during the servicing of vehicles as well as the transfer of chemicals / substances from transportation vehicles. • All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on

Environmental Awareness Plan	
Objective / Environmental parameter: Handling and Storage of materials	
Risks	**Mitigation measures**
	the environment. • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil / groundwater pollution during the construction and operational phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills / groundwater pollution be detected.

Environmental Awareness Plan	
Objective / Environmental parameter: Waste Management (Note that waste refers to all construction debris and domestic waste generated due to construction activities.)	
Risks	**Mitigation measures**
• Contamination of stormwater, surface and or groundwater • Contamination of soil • Occurrence of veld fires • Air pollution	• The contractor is responsible for the removal of construction waste. • Suitable containers will be placed on site to collect all solid waste. These will be emptied regularly. • No littering is permitted. During the construction period the site will be maintained in a neat and tidy condition. • All solid waste produced will be disposed of at an authorized landfill site. • No dumping, burning or burying of waste will be undertaken on site. • All hazardous waste will be disposed of at an authorized hazardous landfill site. • Recyclable hazardous waste may also be re-used or sold to recycling contractors. • Recyclable waste will be sold / re-used, where possible. • A waste management plan will be compiled and designed to ensure adequate waste management activities.

Environmental Awareness Plan	
Objective / Environmental parameter: Soil, erosion and vegetation management	
Risks	**Mitigation measures**
• Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation	• Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily. • Access roads or temporary crossings must be non-erosive, structurally stable and not induce flooding / safety hazard. • If any access road or temporary crossing is impaired, it will be repaired immediately to prevent any future / further damage. • All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat. • Erosion management is important. Rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation. • Stockpiled material will be stockpiled in an area where it will not be disturbed by vehicles. • Stockpiled material will be protected from washing away during rainstorms. For example, one layer of bricks or stones can be placed around the stockpiled topsoil. • Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil is preferably to be done to the natural level, or as indicated by the specialist. • An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase. • Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof. • Imported fill material will be monitored

Environmental Awareness Plan	
Objective / Environmental parameter: Soil, erosion and vegetation management	
Risks	**Mitigation measures**
	during and after construction for the presence of any alien species. Any such species will be removed immediately. • No open fires allowed. Provision will be made that no accidental fires are started. • No firewood will be collected on site or in surrounding areas, without written approval from the landowner. • Fire fighting equipment will be available on site. • Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas. • No animals may be harmed / captured / trapped and / or hunted. This must be strictly enforced. • Animals found at the construction site will be removed and relocated to a suitable area. • Compacted soils (such as dirt tracks not to be utilised during the operational phase) must be ripped to ensure the establishment of natural occurring vegetation.

Environmental Awareness Plan	
Objective / Environmental parameter: Noise and dust control	
Risks	**Mitigation measures**
• Generation of nuisance noise • Generation of nuisance dust	• Construction activities will be limited to normal daytime hours. • Noise levels will be kept as low as possible during the construction phase in order not to disturb adjacent landowners. • Proper mitigation measures will be implemented to limit noise (e.g. the installation of silencers, where required). • Proper mitigation measures will be implemented to limit the formation of dust (e.g. wetting of construction area, when required). • The speed of the construction vehicles will be limited to avoid dangerous conditions, the formation of dust and the excessive deterioration of roads being used.

Environmental Awareness Plan	
Objective / Environmental parameter: Safety and Security	
Risks	**Mitigation measures**
• Health risks • Safety risks • Unsafe Road • Occurrence of veld fires	• The contractors will comply with the Occupational Health and Safety Act, National Building Regulations and any other national, regional or local regulations with regard to safety on site. Construction contracts will include safety and security measures for staff. • Precautions to ensure that construction staff and sites are visible and proper PPE will be provided to all employees. • Construction work within road reserves (if any) will accommodate road users as far as possible. This includes the following: • Roads will be crossed in half widths at a time to minimise the impact on vehicular traffic, where possible. • Construction along and across existing roads will be executed in such a manner that both pedestrian and vehicular traffic is accommodated at all times. • The contractor will be required to maintain adequate access to all public and private property at all times. • Contractor will supply, erect and maintain road signs for all work areas conforming to the prescribed layout and requirement of the South African Road Traffic Signs Manual and other relevant notices. • Fire extinguishers will be available on site and in the construction camp (if any). • The contractor will be required to maintain adequate access to all public and private property at all times.

Environmental Awareness Plan	
Objective / Environmental parameter: Heritage Management	
Risks	**Mitigation measures**
• Loss of heritage / archaeological / palaeontological artifacts	• In the case of the discovery of any heritage, archaeological or palaeontological significance, the work in the area will be stopped and reported to the archaeologist and SAHRA. Any construction activities in the nearby vicinity may only commence after approval is obtained from SAHRA as well as the ECO.

Environmental Awareness Plan	
Objective / Environmental parameter: Site Clean-up and Rehabilitation	
Risks	**Mitigation measures**
• Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation	• Temporary structures and office sites (if any) will be dismantled and removed after completion of the construction phase of the project. • All waste, equipment, materials, etc. used during construction and not to be used during the operational phase will be cleared from the site. The contractors will ensure that the site is cleared and rehabilitated to the satisfaction of the ECO. • An alien plant control and monitoring programme will be implemented. • Re-vegetation of disturbed areas will be undertaken with site indigenous species. Hydro-seeding will be implemented if the establishment of natural occurring vegetation does not occur within reasonable time. • After completion of the construction phase, a waterway monitoring program will be initiated that ensure that all are adequately rehabilitated.

Environmental Awareness Plan	
Objective / Environmental parameter: Operational Phase	
Risks	**Mitigation measures**
• Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation	• Soil erosion occurrences will be attended to immediately. • The necessary mitigation measures should be implemented immediately, should any waste / groundwater pollution be detected. • Regular monitoring will be undertaken to ensure that no soil / groundwater pollution occur due to the activities associated with the operational phase. • An action plan will be available and implemented immediately, in case pollution of soil / groundwater occurs to ensure that it is rectified as soon as possible.

Environmental Awareness Plan	
Objective / Environmental parameter: Decommissioning / Closure	
Risks	**Mitigation measures**
• Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation	• It is not anticipated that the proposed project will cease in the nearby future. However, if decommissioning is decided upon, a rehabilitation plan will be developed and submitted for approval. The end-use of the area will be kept in mind during the compilation of the rehabilitation plan.

Environmental Awareness Plan	
Objective / Environmental parameter: Compliance and Monitoring	
Risks	**Mitigation measures**
• Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation • Undertaking of unauthorised activities • Non-compliance to EMPr / EA / DWS Authorisation	• The applicant will ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction. • An Environmental Control Officer (ECO) will be appointed to monitor the construction phase. Note that the ECO may be appointed separately or can be part of the contractor's team. • Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended. • Inspections should be documented and any shortcomings addressed immediately. • An independent ECO will be appointed to monitor the construction phase. A report will be provided to the contractor upon completion thereof. The findings thereof should be made available to NC DENC, should it be requested. • Any emergency or unforeseen impact will be reported to the relevant environmental department within 24 hours after identification for telephonic approval and will be confirmed in writing. • Material Safety Data Sheets (MSDS) should be available on site. Where possible and available, MSDS should include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.

Appendix I

Stormwater Management Plan

STORMWATER MANAGEMENT PLAN

The proposed construction of a new cemetery Lutzburg, Northern Cape Province

Applicant: Kai !Garib Local Municipality
MDA Ref No: 40900
Date: May 2021

Town & Regional Planners,
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Consultants

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1. Project description

The proposed project entails the construction of a new cemetery at Lutzburg.

Please refer to the map in Appendix A of the Basic Assessment Report for an indication on the locality of the proposed activities.

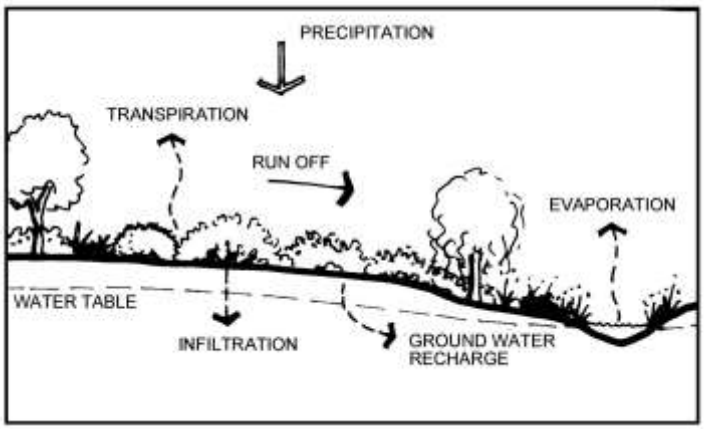
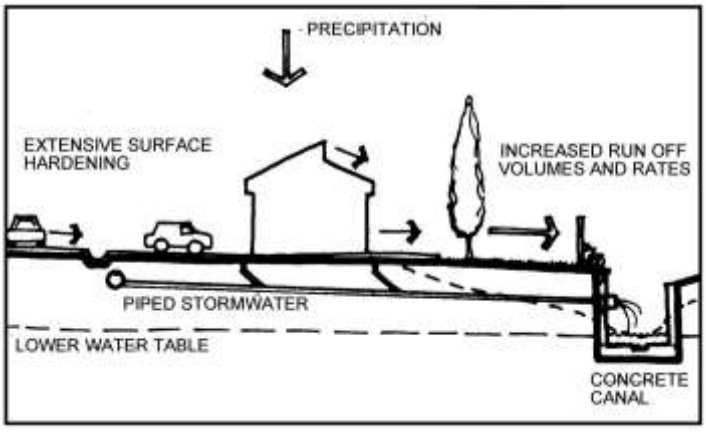
2. Stormwater Management Objectives

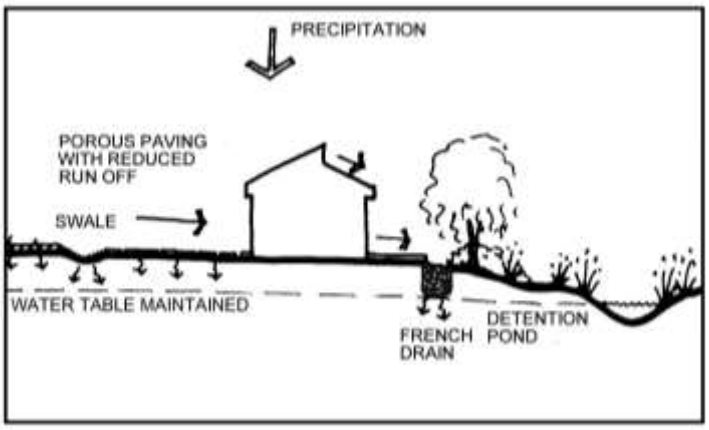
The main objective of the stormwater management plan is to minimise the effect of the proposed project on the environment. This objective can be divided into the following sections:

2.1 Minimising effect of proposed project on environment

The aim of the stormwater management plan is to minimise the effect of the proposed project on the environment (Figure 1).

Figure 1: Indication of effect of stormwater management in a developed area

Nr	Description	Drawing
1	Natural Environment	
2	Developed Area, without sufficient stormwater mitigation measures being implemented	

3	Developed Area, with sufficient stormwater mitigation measures being implemented	

2.2 Minimalize the possibility of flooding

The minimisation of the possibility of flooding remains a key objective of any stormwater management system. However the challenge when contemplating design of stormwater management systems is to consider the following:

- To mimic pre-development responses to storms.
- To reduce the volume of runoff by promoting infiltration.
- To reduce the peak flows and increase the time-to-peak through detaining the runoff and releasing it at a gradual rate.
- Where necessary, to construct means to contain flood waters and safely convey them out of the urban area.

2.3 Protection of Receiving Water Bodies

The receiving water body is not necessarily the system into which stormwater is discharged directly, but can also be a natural system located further downstream in the catchment. Every endeavour should be made to achieve the following as far as possible:

- Maintain natural flow regimes and seasonality
- Prevent deterioration in water quality
- Prevent erosion or sedimentation of natural wetlands or rivers.
- Preserve natural river channels, wetlands and vegetation, and preclude engineering interventions that may alter their physical and ecological characteristics.

The need to design appropriate stormwater management systems for new developments should be seen as an opportunity to preserve or, if possible,

improve natural freshwater ecosystems that have suffered degradation as a result of past activities, and in some cases to create additional freshwater habitats that will contribute to the availability of appropriate, high quality river and wetland habitat that mimics the natural condition.

2.4 Promote Multi-Functional Use of Stormwater Management Systems

Resources such as land and water are becoming increasingly scarce and multiple uses of these must be strived for. Stormwater systems provide a wide range of opportunities for multi-functionality. These can have significant implications on:

- The initial and long term costs of development (e.g. instead of constructing a detention pond and a sports field, these uses could be combined)
- The quality of the natural and urban environment [e.g. the pressure of private development requirements on land for public land use, conservation, etc. can be alleviated by combining compatible land uses such as conservation, recreation and stormwater systems (including wetlands, marshes, dams and rivers) enabling an improved natural and urban environment]
- Maintenance efficiency (e.g. instead of meeting the maintenance requirements of stormwater systems and public open space separately, they could be combined and could include walking/bicycle trails and parks).

2.5 Development of Sustainable Environments

The long-term involvement with the project and consideration of the sustainability of the stormwater management system that is to be implemented should be kept in mind. All relevant factors that will impact on future operation and maintenance should be taken into account. Environmental policies such as promoting the use of locally indigenous vegetation in planting programmes will also reduce the long-term maintenance requirements of the development.

3. Stormwater Planning Regarding the Proposed Project

Adequate planning is crucial to the success of the project as a whole.

3.1. Need for Multi-disciplinary Expertise

To maximise opportunities to manage stormwater, the input from various design teams are necessary (Table 1).

Table 1. Indication of the role that various team members play			
No	**Team member**		**Role**
1	Civil Engineer		An engineer skilled in the design of stormwater systems should determine runoff flows for the required recurrence intervals and proposed land uses and design appropriate measures to attenuate peak flows and safely convey the runoff.
2	Environmental Consultant		Alert the engineer at the conceptual stage of the development to crucial aspects of the environment, which are fulfilling an important role with respect to stormwater and should be taken into consideration, as well as opportunities for enhancement or rehabilitation of existing natural features.
3	If required	Freshwater Ecologist	Provide insight regarding the functioning of natural rivers, streams and wetlands and advice regarding the ecological aspects of the design of the components of the system, including water quality enhancement and the land needed for the system to function.
		Landscape Architect	Provide a holistic site analysis of the existing natural and man-made landscape and advice on the opportunities, constraints and implications of the site on the development planning and design.

3.2. Incorporation of Existing Information into Planning Stage

The following information (where relevant) should be investigated, during the planning stage and used to feed into more detailed site assessment:

- Catchment area in which the site is located.
- Catchment or river management plans (overall management objectives and recommended key management actions with respect to runoff quantity, quality and other associated environmental and social issues, where such plans exist for the catchment in question, must be met in the design stage).
- Stormwater management master plan (identifies bulk infrastructure, including stormwater flow routes, required within developing areas and

may identify particular issues such as pollution which must be addressed at a local level. The existence of a stormwater management master plan which covers the area to be developed should be established and its recommendations applied to the design.
- Existing reports relating to the sensitivity of known wetlands / rivers / other natural ecosystems on or associated with the study area.

Interdependencies exist between the various water related services such as water supply, sanitation and stormwater management. Thus, consideration of the impact of effluent discharges into or water abstraction from stormwater management systems should be taken into account.

3.3. Site Analysis

The physical characteristics of the site reflect the existing course of runoff and stormwater. Working with the natural environment and environmental processes has been found to be safer, more sustainable and easier to maintain in the long term, than more traditional engineering approaches aimed at controlling these processes.

On sites that have been substantially disturbed, consideration should be made of what the natural drainage and runoff conditions would have been, as well as the existing situation. This will enable potential problems, and opportunities, to be identified.

3.3.1. Topography

The consideration of various topographical factors is important for the compilation of a stormwater management plan, due to the following:

- Gradients dictate the direction of flow and runoff/drainage routes can be plotted over land, identifying areas of ponding and concentration of loads.
- In some areas which are very flat, earthworks may be required to provide sufficient grade for drainage.
- Topography influences the potential for erosion to occur.
- Topography informs the feasibility of different locations for stormwater routes, outlets and treatment areas; the main stormwater routes should be located along natural drainage routes.
- In ecological terms, different habitats, some of higher conservation value than others, are frequently associated with changes in topography.

- Road and planning layouts should also reflect the topography of an area, to enable integrated stormwater design and management.
- The commercial (and aesthetic) value of different sections of a development area is also frequently derived from different topographical characteristics.

3.3.2. Geology, Soils and Groundwater

The infiltration potential of the site is mostly determined by the geology, soil and groundwater conditions of the area. The following factors should be considered, where possible:

- Soil types affect surface permeability and hence rate of runoff.
- The mapping of geology and soils will indicate areas of potential groundwater recharge.
- Geology and soils influence the potential for erosion to occur.
- Soil types should be identified, along with the characteristics of the different soils, such as levels of infiltration, permeability and their water-bearing capacity.
- The presence of contaminated soils, which may pose a threat to surface and groundwater quality should be identified and plotted.
- Areas of high groundwater levels can limit the possibilities and/or desirability of groundwater recharge and filtration methods.
- It should be noted that large-scale removal of certain vegetation types, such as Port Jackson (*Acacia saligna*) and Bluegums (*Eucalyptus sp*.), that consume large volumes of water, might significantly raise groundwater levels
- Need to determine seasonal and longer term trends in groundwater level fluctuation.
- Soil types indicate the likely occurrence of particular plant communities, some of which may play a role in the stormwater management plan
- Assessing soils can also indicate the presence of both existing and even historic wetlands.
- Seasonal variation of groundwater levels should be taken into account
- The geology and soils of a site will inform the feasibility of different locations for stormwater treatment areas and the potential for groundwater recharge.
- Different habitats (some with high conservation value) are associated with specific geological features and soils.

3.3.3. Climate

The following climatic factors should be considered, where necessary:

- Storm rainfall parameters are major design factors and must be carefully determined
- The general climatic characteristics of an area will also impact on the site and stormwater systems implemented, i.e. whether the site is generally waterlogged or dry and if evaporation levels are high or low
- Microclimate conditions can inform the spatial layout of water treatment and attenuation, particularly those associated with specific planting and multifunctional uses

3.3.4. Hydrology

It is essential, for successful, sustainable and integrated stormwater management, that the existing and/or natural hydrological response and functions of the site are understood. The following factors should be considered:

- The natural drainage that was characteristic of the development area, to the extent that this is possible, should be determined and both the irreversible as well as less permanent changes that have taken place should be identified
- The hydrology of the development area is a function of much of the other data, which is described under the Site Analysis section.

3.3.5. Cultural and Historical Landscapes and Archaeological Sites

Areas, routes, vegetation and landmarks that have a cultural and/or historical use or significance should be identified. Development and stormwater planning should avoid disturbing these areas where possible. Where possible they should generally be incorporated within the public open space of a development. This contributes a further function to the public open space system, and should be integrated into a network of public open space.

3.4. Development Requirements

The public open space and pedestrian access requirements of a development should be incorporated into the stormwater management planning of the site. The integration of public open space and access requirements with the spatial requirements of stormwater management not only reduces the conflict of pressure on land, but also enables the amalgamation of maintenance requirements, and maximises the use of resources. The following factors should be considered (where necessary):

- Land use planning should be done in relation to the natural context and characteristics of the site. The appropriate placement of land uses will enhance the multi-functionality of the stormwater systems and their use as an amenity by residents in the area.
- Innovative opportunities exist for future stormwater management systems to link-up and add value to educational initiatives (outdoor classroom), ownership (friends groups adopting the system), and water saving (re-use of stormwater/treated effluent for irrigation).
- These opportunities are also area specific and need to be identified up front, rather than as a nice-to-have-after-thought
- The need for a safe environment must be taken into account (e.g. avoid of potential hiding places for criminal elements; do not create unnecessary hazards in the selection of stormwater management options).
- The cost of stormwater implementation, management and maintenance, as well as flood risk, can be greatly reduced by identifying, retaining and enhancing the natural areas along which runoff and natural habitat retain ecological integrity. The advantages of this approach are not limited to stormwater, but can increase the visual, amenity and ecological value of a development.

3.5. Site Planning

3.5.1. Analysis

The developer should take the information stipulated in Section 2.3 into consideration during the Site Analysis Process.

3.5.2. Conceptual Layout

A general concept plan for the site layout should be developed, taking into account the legal and physical aspects of the site as developed through the site analysis process.

3.6. Design Phase

3.6.1. Appropriate Stormwater Management Facilities and Techniques associated with the project

Various stormwater management facilities and techniques were evaluated in terms of engineering, ecological, health, safety, aesthetic, social, construction and maintenance design objectives.

Various facilities and techniques may be utilised to manage stormwater runoff from the development.

3.6.2. Conveyance

Conveyance can be summarised as the use of natural or artificial channels, natural or artificial wetlands or pipes and culverts for stormwater conveyance as well as the prevention of erosion.

In general terms, the developer should consider the following aspects when selecting designs for stormwater conveyance:

- The slopes of the development area – stormwater design on steep slopes will need to incorporate methods for reducing erosion.
- Soil type and stability in the development area – the former will affect infiltration rates, as well as the potential for establishment of different kinds of plant communities in unlined conveyance structures; the latter will affect the degree of stabilisation that may be necessary.
- Seasonal changes in water table height – groundwater should not be exposed by unlined conveyance structures during summer, as this will promote drainage of the groundwater resource; infiltration capacity will be reduced if the water table is above an unlined channel during winter.
- The cost of land – where land is at a premium, use of large areas for stormwater conveyance may be prohibitively expensive. Nevertheless, the increase in aesthetic and other forms of amenity value that may be

gained from sensitive and imaginative stormwater designs may make the use of such space more economically feasible.

- Presence of natural water bodies that would lend themselves to the conveyance of stormwater
  - Habitat integrity, priority ranking and/or ecological importance and sensitivity of the system should be considered
  - Sensitive systems should be protected from, rather than incorporated into stormwater conveyance design.
- The volume of expected stormwater runoff, during within-year flood events, and during larger storm events.
- The availability of open space for stormwater conveyance – large areas of open public or private space often lend themselves to the creation of wide, artificial waterways, which may also have ecological, recreational and aesthetic value in addition to providing a stormwater function.
- The presence of litter and sediment which would result in blockages.

Erosion is unfortunately often associated with development as areas become disturbed or as stormwater runoff is concentrated at outlets. In order avoid these problems, options such as stabilisation, energy dissipation and the design of stormwater management systems, which do not concentrate flows, are recommended. A number of structures incorporated into stormwater design play a role in the dissipation of energy required to prevent erosion at outlet and inlet points, and at various points in different conveyance structures. This section provides brief commentary on the ecological, engineering and aesthetic function of each of these.

Soil which has been disturbed or from which the vegetation has been removed, should be stabilised to prevent erosion due to wind or runoff. Such erosion could cause the stormwater system to block, thereby resulting in the flooding of properties. Stabilisation would be short term, for the duration of the construction phase, followed by long term on completion of construction. Particular care should be taken of areas where development will not take place immediately on completion of the construction phase, e.g. wide verges in the road reserve which have been acquired to accommodate future road widening, or erven reserved for unspecified local authority use.

3.7. Construction

3.7.1. Civil Engineering Specifications

All materials and workmanship should comply with the SABS Specifications.

3.7.2. Environmental Management Programme

Please refer to Appendix G of the BAR for a copy of the EMPr.

3.7.3. Protection of Stormwater Systems during the Construction Phase

The proposed construction activities will be undertaken in the dry season (winter months), where possible in order to limit impacts on the flow of stormwater. The above will also be included in the documentation to the contractor.

3.7.4. Vegetation and Stabilisation

Structures that rely on infiltration for their efficacy should not come into operation until their runoff areas have been stabilised, following construction. This will prevent the need for early and costly maintenance of structures.

If stabilisation by planting is envisaged, plants should be established before the onset of the winter rains (if possible). A phased approach to construction should be considered, where the extent of the water course is such that planting of the whole area will take too long for stabilisation to be effective, or where construction activities are likely to take longer than the period between the end of the wet season and the end of the dry season, when planting should take place.

In some cases, delays in the design or tender stages of a project result in delaying construction such that plants are unlikely to be established before the start of the rainy season. Planting during the rainy season is likely to result in the costly loss of plants, due to washout, as well as the erosion of banks, often resulting in the destruction of careful landscaping of bank slopes and profiles. In such cases, it is suggested that planting be delayed until after the end of the rainy season.

Delays in planting are likely to have cost implications for the project as a whole: survival of pre-ordered, potted plants is often not good over a whole year; in addition, regarding and shaping of eroded banks may be necessary. Nevertheless, it should also be noted that there are advantages to such delays in planting – for one thing, it allows water levels and rates of flow to be observed over one year, and these observations can be used to guide plant zonation.

It is strongly recommended that any planting programmes carried out in stormwater management systems make use of locally indigenous plant species. Indigenous species tend to require less costly nurturing than do exotics. Moreover, they are often less prone to disease and, from an ecological perspective, can also provide areas of indigenous habitat, potentially linking areas of natural indigenous habitat, across the development area.

4. Stormwater Management Plan (Construction phase)

Given the project and site information as listed in the sections above it is possible to compile a Storm Water Management Plan in order to manage and limit possible environmental, surface and groundwater impacts associated with stormwater runoff.

4.1. Potential Pollution sources

The areas and activities that require particular attention with regard to the potential negative impacts of uncontrolled stormwater runoff need to be identified. The potential pollution sources related to the proposed project can be listed as follows:

- Construction camp
- Stockpile area
- Trench excavation
- Concrete mixing

4.2. Preventative measures and stormwater management tools

The following preventative measures and Management tools can be implemented in order to minimise and prevent the negative effects of storm water impacts for the identified pollution sources as well as other project related activities.

4.3. General preventative measures and stormwater management tools during the construction phase

- The applicant will ensure that the contractors adhere to the recommendations of the of the EMPr as well as conditions set out in the Environmental Authorisation during construction

- An Environmental Control Officer (ECO) will be appointed to monitor the entire construction phase. Note that the ECO can be appointed independently or as part of the contractor's team.
- Regular monitoring and / or spot inspections must be conducted. It is recommended that the above mentioned monitoring / spot inspections occur at least every fortnight during the construction phase.
- Inspections must be documented and any shortcomings must be addressed immediately.
- An independent ECO will be appointed to monitor the construction phase. A report will be provided to the contractor upon completion thereof. This report and its findings should be made available to the environmental department if requested.

4.4. Construction camp

- Proper sanitation, portable water and waste facilities must be in place before construction activities commence.
- Care must be taken to prevent any unnecessary damage to vegetation near construction base camp and any other construction activities.
- Potable water must be made available to workers on a daily basis.
- Caution must be taken to ensure that no construction materials are stored or dumped within 32 meters of a watercourse or buffer zones.
- Emergency plans must be available in case of any spillages into or near water resources.
- All chemicals used during the development, including fuel for the construction vehicles, will be stored in a proper storeroom or protected area to prevent pollution.
- Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere.
- Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary.
- Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground.
- All environmental problems occurring on the site such will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment.
- The contractor is responsible for the removal of construction waste.
- Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction

vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily.
- All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat.
- The area where the construction camp will be set out should be flat in terms of surface and not situated within 32meters from existing water courses.
- A temporary impervious surface should be provided where equipment and/or any hazardous materials (cement, lime, oil and fuel) can be stored, handled and used.
- In the event of any spillage incident the spillage should be cleaned, removed and discarded at the nearest authorised disposal facility.
- Chemical toilets must be serviced and cleaned regularly by the contracted entity.
- All and any waste generated by the construction workers must be disposed of in bins provided, these bins should be emptied and taken to the nearest applicable disposal facility on a regular basis.

4.5. Stockpile area

- Removed topsoil will be stockpiled in an area where it will not be disturbed by vehicles.
- Stockpiled material will be protected from washing away during rainstorms. For example, one layer of bricks or stones can be placed around the stockpiled material.
- On-site contractors are responsible for maintaining stockpiles.
- Weather forecasts from the South African Weather Bureau of up to three days in advance must be monitored on a daily basis in order to avoid exposure of soil, construction works or other harmful materials during a possible storm event.
- Weather forecasts must also be used as a tool to ensure that appropriate actions are taken to avoid the runoff/ erosion of topsoil or other stockpiled materials.
- The temporary stockpiling of soils or any other material should preferably be stored on flat surfaces, in flat topped mounds with side slopes not exceeding an 1:2 slope.
- The stockpiling of soils or other materials should occur more than 32meters from a water course on a relative flat surface.
- In the event of a surplus material or material unsuitable for backfilling however designated to remain onsite for landscaping, shall as early as

possible be placed in its permanent position, be covered with top soil and vegetated.
- Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil is preferably to be done to the natural depth or as indicated by the specialist.
- An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase.
- Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof.
- Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed immediately.

4.6. Mixing of concrete

- Cement mixing should take place on impermeable liners.
- The cleaning of cement mixing and related equipment will be conducted using proper cleaning trays.

4.7. Other activities related to the project

- Site clearance:
  - Vegetation should not be stripped for the entire construction site at project commencement.
  - Phased vegetation clearance as the project continues is advised.

- Topsoil strip:
  - Should only commence on areas where immediate work will commence.
  - The extent of these areas should be limited to a minimum and only commence as work progresses to new areas.
  - The period of time between completion of topsoil removal and the commencement of earthworks should be kept at a minimum.
  - The topsoil and seedbank should be stripped, and stockpiled separately and protected against weed infestation and erosion
  - Topsoil should be replaced on top of the soil surface from which it was removed as soon as possible.

5. Stormwater Management Plan (Operational phase)

It is not anticipated that the project should pose further negative potential stormwater impacts after construction, however the following Preventative measures and stormwater management tools should be implemented after the construction phase:

- After the completion of the construction phase a water way monitoring programme will be initiated to ensure the entire area is adequately rehabilitated.
- Following the completion of construction of all infrastructures, the area might be susceptible to erosion due to certain disturbances, areas should be evaluated post construction and determined.
- The areas found to be susceptible to erosion should be equipped with gabions or other geotextiles in order to prevent extensive erosion.
- Following the cessation of construction activities that took place in streams, streams should be inspected regularly for erosion and the necessary mitigation should be applied in order to rectify the situation and prevent further erosion.
- Any and / all areas that have been compacted due to construction activities must be ripped and rehabilitated to its original state.
- After the cessation of construction related activities the area must be rehabilitated and transformed to its original state, as far as possible.
- The re-establishment of natural occurring vegetation should be monitored. Hydro- seeding should be implemented if natural re-establishment methods fail.
- After construction has ceased all construction materials should be removed from site.
- Regular inspections of the site should be conducted to identify leakages, poor vegetation regrowth and or any erosion occurrences. Soil erosion occurrences will be attended to immediately.

6. Summary of stormwater mitigation measures to be implemented

6.1. Prevent concentration of stormwater flow at any point where the ground is susceptible to erosion.
6.2. Reduce stormwater flows as far as possible by the effective use of attenuating devices (such as swales, berms, silt fences). As construction progresses, the stormwater control measures are to be monitored and adjusted to ensure complete erosion and pollution control at all times.
6.3. Minimise the area of exposure of bare soils to minimise the erosive forces of wind, water and all forms of traffic.
6.4. Ensure that development does not increase the rate of stormwater flow above that which the natural ground can safely accommodate.
6.5. Ensure that all stormwater control works are constructed in a safe and aesthetic manner in keeping with the overall development.
6.6. Design culvert inlet structures to ensure that the capacity of the culvert does not exceed the pre-development stormwater flow at that point.
6.7. Design outlet culvert structures to dissipate flow energy. Any unlined downstream channel must be adequately protected against soil erosion.
6.8. Permits will be obtained for the removal / transplantation of protected species (if any) that are located within the proposed road route where no alternatives are possible. Care will be taken to prevent unnecessary damage to vegetation near to construction activities.
6.9. The necessary Environmental Authorisation will be obtained before any activities listed in the Regulations (Regulations 982, 983, 984 and / or 985 of 2014) are undertaken.
6.10. Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken.
6.11. Care will be taken to prevent unnecessary damage to vegetation near to construction activities.
6.12. Potable water will be made available daily to workers on site.
6.13. No activities will be undertaken within 32 m of a watercourse / within the 1:100 year floodline, without the necessary authorisations (for example from DESTEA and DWS).
6.14. Emergency plans will be in place in case of spillages into the water resource(s).
6.15. All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO).
6.16. All chemicals used during the development, including fuel for the construction vehicles, will be stored in a proper storeroom or protected area to prevent pollution.

6.17. Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere.
6.18. Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary.
6.19. Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground.
6.20. All environmental problems occurring on the site such will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment.
6.21. The contractor is responsible for the removal of construction waste.
6.22. Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily.
6.23. All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat.
6.24. Erosion management is important. Rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation.
6.25. Removed topsoil will be stockpiled in an area where it will not be disturbed by vehicles.
6.26. Stockpiled material will be protected from washing away during rainstorms. For example, one layer of bricks or stones can be placed around the stockpiled material.
6.27. Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil is preferably to be done to a maximum of 10 cm, depending on the natural depth.
6.28. An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase.
6.29. Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof.
6.30. Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed immediately.
6.31. The total depth of excavation will be kept to a minimum, where possible.

6.32. Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas.
6.33. An alien plant control and monitoring programme will be implemented.
6.34. Re-vegetation of disturbed areas will be undertaken with site indigenous species.
6.35. Soil erosion occurrences will be attended to immediately.
6.36. The applicant will ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction.
6.37. An Environmental Control Officer (ECO) will be appointed to monitor the construction phase. Note that the ECO may be appointed separately or can be part of the contractor's team.
6.38. Regular monitoring and / or spot inspections at least every two weeks during the construction phase is recommended.
6.39. Inspections should be documented and any shortcomings addressed immediately.
6.40. An independent ECO will be appointed to monitor the construction phase. A report will be provided to the contractor upon completion thereof. The findings thereof should be made available to DESTEA, should it be requested.
6.41. The drainage system for the site should be designed to specifications that can adequately deal with a 1:50 year intensity rainfall event or more to ensure sufficient capacity for carrying storm waters around and away from infrastructure.
6.42. Procedures for storm water flow through a project site need to take into consideration both normal operating practice and special circumstances. Special circumstances in this case typically include severe rainfall events.

APPENDIX J

Additional information

APPENDIX J_1

Confirmation from Kai !Garib Local Municipality

N/A, as the applicant is the said municipality.

APPENDIX J_2

Title Deed Document

Printed: 2019/08/07 12:08

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Deeds Office Property

C02800050000026100000

GENERAL INFORMATION

Date Requested	2019/08/07 12:08
Deeds Office	
Information Source	DEEDS OFFICE
Reference	-

PROPERTY INFORMATION

Property Type	AGRICULTURAL HOLDING
Holdings Area	KAKAMAS NORTH SETTLEMENT AGRICULTURAL HOLDING
Holdings Number	261
Portion Number	0 (REMAINING EXTENT)
Local Authority	KAI GARIB MUNICIPALITY
Registration Division	GORDONIA RD
Province	NORTHERN CAPE
Diagram Deed	T1707/1976
Extent	11.3835 H
Previous Description	GED VAN PERS 3
LPI Code	C02800050000026100000

OWNER INFORMATION

Owner 1 of 1

Type	-
Name	KERKRAAD VAN DIE N G SENDINGGEMEENTE KAKAMAS
ID / Reg. Number	-
Title Deed	T507/1994
Registration Date	1994/03/09
Purchase Price (R)	-
Purchase Date	-
Share	-
Microfilm	-
Multiple Properties	NO
Multiple Owners	NO

ENDORSEMENTS (3)

#	Document	Institution	Amount (R)	Microfilm
1	I-1382/2002LG	-	-	-
2	KAART NR OD 4888	-	-	-
3	VORIGE GROOTTE	17,4698HA	-	-

HISTORIC DOCUMENTS (3)

#	Document	Owner	Amount (R)	Microfilm
1	T1707/1976	MUNISIPALITEIT KAKAMAS	-	-
2	T506/1994	BRUWER CHAREL ANDRIES 5690	-	-
3	T506/1994	BRUWER ERIKA FRANCINA 5690	-	-

DISCLAIMER

APPENDIX J3

Specialist Declarations

agriculture, environmental affairs,
rural development and land reform

Department:
agriculture, environmental affairs,
rural development and land reform .
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

Application for authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014 as amended.

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

1. Project title:

Report on the ecological assessment of the proposed development of a graveyard in Lutzburg, Northern Cape Province.

2. Details of the specialist:

Project Specialist:	DPR Ecologists and Environmental Services		
Trading name (if any):			
Business reg. no./ID. no.:			
Contact person:	Darius van Rensburg		
Physical address:	61 Topsy Smith, Langenhoven Park		
Postal address:	P.O. Box 12726, Brandhof		
Postal code:	9324	Cell:	0834100770
Telephone:		Fax:	
E-mail:	darius@dprecologists.co.za		
Qualifications:	M.Sc. Ecology		
Professional affiliation (s) (if any)	SACNASP Reg. Nr. 400284/13 (Ecological Science)		

3. Details of the consultant

Project consultant/firm:	MDA		
Business reg. no./ID. no.:			
Contact person:	Neil Devenish		
Postal address:	P.O. Box 100982, Brandhof, Bloemfontein		
Postal code:	9324	Cell:	
Telephone:	051 447 1583	Fax:	051 448 9839
E-mail:	neil@mdagroup.co.za		

4. Declaration by the specialist appointed in terms of the Environmental Impact Assessment Regulations, 2014 as amended.

I, DP van Rensburg, declare that –

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

DPR Geologists and Environmental Services

Name of company (if applicable):

15/03/2022

Date:

Signature of the Commissioner of Oaths:

2022/03/15

Date:

Designation:

Official stamp (below):

SUID-AFRIKAANSE POLISIEDIENS
15 MAR 2022
BAINSVLEI
HUMAN RESOURCE MANAGEMENT
SOUTH AFRICAN POLICE SERVICE

agriculture, environmental affairs,
rural development and land reform

Department:
agriculture, environmental affairs,
rural development and land reform .
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

Application for authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014 as amended.

	(For official use only)
File Reference Number:	
NEAS Reference Number:	
Date Received:	

1. Project title:

The proposed construction of a new cemetery, Lutzburg, Northern Cape Province

2. Details of the specialist:

Project Specialist:	Dr Lloyd Rossouw		
Trading name (if any):			
Business reg. no./ID. no.:	6711225124086		
Contact person:	Dr Lloyd Rossouw		
Physical address:	12 Piet du Plooy Street, Langenhovenpark, Bloemfontein		
Postal address:	P.O. Box 38806, Langenhovenpark		
Postal code:	9330	**Cell:**	0842505992
Telephone:		**Fax:**	
E-mail:	lloyd@paleofs.co.za		
Qualifications:	BAHons (SU), MSc (Wits), PhD (UFS)		
Professional affiliation (s) (if any)	ASAPA PSSA		

3. Details of the consultant

Project consultant/firm:	MDA		
Business reg. no./ID. no.:			
Contact person:	Neil Devenish		
Postal address:	P.O. Box 100982, Brandhof, Bloemfontein		
Postal code:	9324	**Cell:**	
Telephone:	051 4477 1583	**Fax:**	051 448 9839
E-mail:	neil@mdagroup.co.za		

4. Declaration by the specialist appointed in terms of the Environmental Impact Assessment Regulations, 2014 as amended.

I, Lloyd Rossouw, declare that –

- I act as the independent specialist in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Name of company (if applicable):

18 / 03 / 2022

Date:

WO 0469148-2 MARCA ALETTA JANET VAN VUUREN.

Signature of the Commissioner of Oaths:

2022-03-18.

Date:

WO. SAPS. 1 Tennantop Abrahamskraal road, Bloemfontein

Designation:

Official stamp (below):

SUID-AFRIKAANSE POLISIEDIENS

18 MAR 2022

DAMSVLEI

HUMAN RESOURCE MANAGEMENT

SOUTH AFRICAN POLICE SERVICE

APPENDIX J4

EAP Declaration

DECLARATION OF THE EAP

I, **Neil Devenish**, declare that –

General declaration:

- I act as the independent environmental practitioner in this application
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the Regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 71 of the Regulations and is punishable in terms of section 24F of the Act.

Enquiries: T. Leburu
Email: tmakaudi@ncpg.gov.za

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

Signature of the environmental assessment practitioner:

MDA

Name of company:

17/03/2022

Date:

Signature of the Commissioner of Oaths:

17/03/2022

Date:

Practicing Attorney.

Designation:

Official stamp (below)

COMMISSIONER OF OATHS
LIZANNE VAN DER WALT
ATTORNEY ADMITTED
I.T.O. ACT 53/1979 R.S.A
12 BARNES STREET, BLOEMFONTEIN

Enquiries: T. Leburu
Email: tmakaudi@ncpg.gov.za