agriculture, environmental affairs,
rural development and land reform

Department:
agriculture, environmental affairs,
rural development and land reform .
NORTHERN CAPE PROVINCE
REPUBLIC OF SOUTH AFRICA

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(For official use only)

File Reference Number:	
Application Number:	
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 of 07 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~~	**NO**

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

The development proposal entails the establishment of a conventional oxidation pond Wastewater Treatment Works ("WWTW") of approximately 2000m^3/ day in capacity and some associated infrastructure on Erf 1654, Kakamas. The proposed WWTW and associated infrastructure will serve the town of Kakamas, treating its wastewater delivered by municipal suction truck (honey sucker) and raw sewerage rising main, and include *inter alia* the following:

- Operational Building/Shelter Inlet Works (inclusive of Tanker Truck discharge facility)
- Screenings Removal
- Grit Channels
- Flow measurement
- Anaerobic Ponds x 2 (lined with HDPE membrane)
- Facultative Ponds x 2 (lined with HDPE membrane)
- Aerobic Ponds x 3 (lined with HDPE membrane)
- Final Storage Pond (lined with HDPE membrane)
- Horizontal Flow Reedbed (to filter out TSS to achieve General Limit)
- Disinfection facility 3.57km x 250mm diameter Wastewater Rising Main pipeline
- 3.87km x 300mm diameter, Treated Effluent Gravity Main from WWTP to Orange River
- 22kV x 2.5km overhead Electrical Power supply line + Transformer

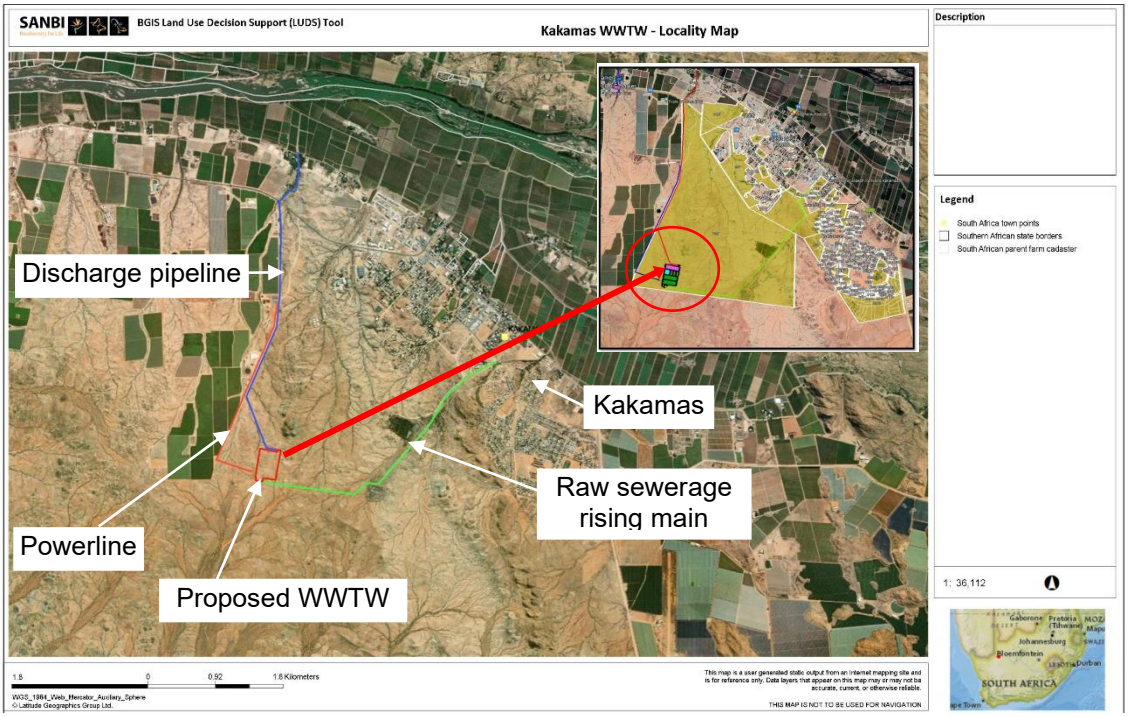

Figure 1: SANBI BGIS image of the locality of the proposed WWTW and associated infrastructure

Approximate site coordinates for proposed WWTW:
28°47'30.44" S, 20°35'47.11" E.

Approximate site coordinates for proposed raw sewage pipeline route:
28°46'50.71" S, 20°37'26.44" E
28°46'57.74" S, 20°37'12.77" E
28°47'15.78" S, 20° 36'57.50" E
28°47'38.14" S, 20° 36'35.34" E
28°47'37.36" S, 20° 36'30.32" E
28°47'42.00" S, 20° 36'24.72" E
28°46'50.71" S, 20° 37'26.44" E

Approximate site coordinates for proposed treated sewage pipeline route:
28°47'23.7" S, 20°35'45.92" E
28°47'04.32" S, 20°35'37.61" E
28°46'37.33" S, 20°35'50.66" E
28°46'24.84" S, 20°35'51.81" E
28°45'49.69" S, 20°37'26.44" E
28°45'51.06" S, 20°35'52.01" E
28°45'44.35" S, 20°35'59.26" E
28°35'30.88" S, 20°35'59.65" E

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

Listing Notice 1 (GN327)	Description of project activity
Activity 9, *"The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water—* *(i) with an internal diameter of 0,36 metres or more; or* *(ii) with a peak throughput of 120 litres per second or more;* *excluding where—* *(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or* *(b) where such development will occur within an urban area*".	The proposed development requires that a pipeline longer than 1000m be built for the bulk transportation of raw sewage to the proposed WWTW and another pipeline that is longer than 1000m be built to convey treated wastewater from the proposed WWTW towards the Orange River for disposal.
Activity 12, *"The development of;* *(iv) dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size;* *(xii) infrastructure or structures with a physical footprint of 100 square metres or more;* *where such development occurs;* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;* *— excluding—*	The proposed development includes infrastructure with a total development footprint bigger than 100m^2 within 32m of some watercourses.

(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; *(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in Activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such development occurs within an urban area;* *(ee) where such development occurs within existing roads, road reserves or railway line reserves; or* *(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared*".	
Activity 19, *"The infilling or depositing of any material of more than 10 cubic meters into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic meters from a watercourse"*	The proposed development includes excavation and moving of more than 10m^3 of material within 32m of some watercourses.
Activity 25, *The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2000 cubic metres but less than 15000 cubic metres.*	The proposed WWTW is designed to treat approximately 2000m^3 of wastewater per day
Activity 27, *"The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan*"	The establishment of the proposed WWTW and associated infrastructure requires that more than 1ha and less than 20ha of indigenous vegetation be cleared.
Activity 28, *"Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:* *(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is*	The establishment of the proposed WWTW requires that more than 1ha but less than 20ha of indigenous vegetation be cleared on land zoned Agriculture.

bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes".	
Listing Notice 3 (GN324)	**Description of project activity**
Activity *14*, *"The development of—* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or* *(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.* ***g. Northern Cape*** *"i. In an estuary;* *ii. Outside urban areas:* *(aa) A protected area identified in terms of NEMPAA, excluding conservancies;* *(bb) National Protected Area Expansion Strategy Focus areas;* *(cc) World Heritage Sites;* *(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(ee) Sites or areas identified in terms of an international convention;* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(gg) Core areas in biosphere reserves;* *(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve;* *(ii) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is*	The proposed development requires that infrastructure exceeding 10m^2 in size be established outside the urban area and within 32m of some watercourses

determined; or *ii. Inside urban areas:* *(aa) Areas zoned for use as public open space;* *(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, zoned for a conservation purpose; or* *(cc) Areas seawards of the development setback line".*	

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.

a) Site alternatives

The Preferred Site Alternative is the only feasible site alternative considered for the development proposal.

Alternative 1 (preferred alternative)		
The Preferred site alternative is located on Erf 1654, Kakamas South Settlement. The site slopes gently downwards from the south towards the Orange River in the north, with active agricultural fields located immediately to the west and a residential area located approximately 1.5km to northeast.	Lat (DDMMSS)	Long (DDMMSS)

Please refer to Section 1 above for the geographic coordinates of the proposed site.		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

In the case of linear activities:

Alternative:	**Latitude (S):**	**Longitude (E):**
Alternative S1 (preferred)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative S2 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		
Alternative S3 (if any)		
• Starting point of the activity		
• Middle/Additional point of the activity		
• End point of the activity		

For route alternatives that are longer than 500m, please provide an addendum with co-ordinates taken every 250 meters along the route for each alternative alignment.

In the case of an area being under application, please provide the co-ordinates of the corners of the site as indicated on the layout map provided in Appendix A of this form.

b) Layout alternatives

The Preferred layout alternative described in Section 1 above is the only layout alternative considered.

Alternative 1 (preferred alternative)		
Please refer to the description of the proposed development provided in Section 1 (**See Appendix A1 - Locality Map**)	Lat (DDMMSS)	Long (DDMMSS)
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

Alternative 1 (preferred alternative)
The technology alternative employed is the Preferred Alternative, *i.e.*, the conventional oxidation ponds WWTW, described in Section 1 above, and is the only technological alternative considered.
Alternative 2
Alternative 3

d) Other alternatives (e.g. scheduling, demand, input, scale and design alternatives)

Alternative 1 (preferred alternative)		
N/A		
Alternative 2		
Alternative 3		

e) No-go alternative

This would mean that the WWTW and associated infrastructure on Erf 1654, Kakamas would be abandoned, and the site would remain in its current state.

The oxidation ponds at the existing Kakamas WWTW are currently receiving approximately 11 times more wastewater than the volumes their design was meant for and therefore can no longer effectively treat the wastewater received. This situation has resulted in significant environmental pollution in the area. It is anticipated that as the population of Kakamas continues to grow, the volumes of wastewater delivered to the existing overwhelmed WWTW will also grow. The quality of treated wastewater released from the existing WWTW will therefore likely worsen, resulting in even higher levels of pollution if the 'no-go' alternative is adopted.

The 'no-go' alternative is clearly undesirable, when considering that authorising the Preferred alternative will assist in ending the existing sewage pollution being endured by the community of Kakamas and that any potential negative impacts of the proposed development are likely to be Medium to Low.

.

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 A1[1] (preferred activity alternative)	Approximately 85 000 m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

or, for linear activities:

Alternative:	**Length of the activity:**
Alternative A1 (preferred activity alternative)	m
Alternative A2 (if any)	m
Alternative A3 (if any)	m

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

Alternative:	**Size of the site/servitude:**
Alternative A1 (preferred activity alternative)	m^2
Alternative A2 (if any)	m^2
Alternative A3 (if any)	m^2

4. SITE ACCESS

Does ready access to the site exist?	**YES**	~~NO~~
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

No new access roads are required.

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;

[1] "Alternative A.." refer to activity, process, technology or other alternatives.

- 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?	~~YES~~	**NO**	Please explain
The proposed WWTW and associated infrastructure has not yet been granted permission in terms of land use management legislation.			
2. Will the activity be in line with the following?			
(a) Provincial Spatial Development Framework (PSDF)	**YES**	~~NO~~	Please explain
The proposed development is too small to have any kind of significant bearing on the PSDF			
(b) Urban edge / Edge of Built environment for the area	**YES**	~~NO~~	Please explain
The proposed WWTW has no bearing on the urban edge.			
(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**	~~NO~~	Please explain
The Kai !Garib Local Municipality is the Applicant			
(d) Approved Structure Plan of the Municipality	**YES**	~~NO~~	Please explain
The Kai !Garib Local Municipality is the Applicant			
(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**	~~NO~~	Please explain
No EMF is known to exist for the area			
(f) Any other Plans (e.g. Guide Plan)	**YES**	~~NO~~	Please explain
The Kai !Garib Local Municipality is the Applicant			

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)?	**YES**	~~NO~~	Please explain
The Kai !Garib Local Municipality is the Applicant. The existing Kakamas WWTW services the town of Kakamas and several smaller surrounding villages whose wastewater is delivered via municipal suction truck. The WWTW receives approximately 11 times more wastewater than its design was meant for and therefore it can no longer effectively treat the wastewater received. This situation has resulted in significant environmental pollution. It is anticipated that as the population of the area grows, the volumes of wastewater currently overwhelming the Kakamas WWTW will increase and thus the quality of treated wastewater released by the Kakamas WWTW will worsen and result in even higher levels of pollution. The municipality wishes to establish the proposed WWTW at Kakamas together with several smaller WWTWs in the surrounding villages to help in ending the sewage pollution caused by the existing Kakamas WWTW. The several smaller WWTWs in the surrounding villages will alleviate pressure on the existing overwhelmed Kakamas WWTW. This would provide a significantly benefit to society by helping to end the sewage pollution currently being endured by the community of Kakamas. The construction phase of the Kakamas WWTW will yield further socio-economic benefits by providing employment opportunities to residents of the local area during the construction phase, thereby alleviating the unemployment situation in the municipal area. In addition, construction material possible, will be sourced as much as possible from the suppliers in the area and this will boost business in the area, thereby strengthening the local economy.			
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**	~~NO~~	Please explain
The wastewater treatment capacity at the existing Kakamas WWTW is approximately 430m^3/ day and this capacity is significantly outstripped by the volumes of wastewater delivered thereto from Kakamas and the several surrounding villages. A significant sewage pollution problem currently exists in Kakamas as a result of this situation. Please see above answer to Question 3 for elaboration.			

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**	~~NO~~	Please explain
The proposed development does not require any additional municipal services. In fact, the proposed WWTW and associated infrastructure will add to the wastewater treatment capacity of the municipality. Please see above answer in question 3 for further detail.			
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**	~~NO~~	Please explain
The Kai !Garib Local Municipality is the Applicant			
7. Is this project part of a national programme to address an issue of national concern or importance?	**YES**	~~NO~~	Please explain
The provision of basic services that include *inter alia*, adequate sewage disposal is a national concern and a constitutional right. Please see above answer in question 3 for detail.			
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**	~~NO~~	Please explain
The proposed site is bordered by active agricultural fields to the west, vacant land to the south, the Orange River to the North and a residential area approximately 1.5km to the north-east. The proposed site is therefore not in close proximity to densely populated areas and this is a desirable characteristic. A WWTW would typically be located at the lowest point of a town to facilitate gravitation of wastewater through sewer lines. However large tracts of high-value agricultural land exist in the belt between the town and the Orange River where the lowest point is located. The higher-lying land to the south of Kakamas is the only practical location where the municipality owns a parcel of land that is sufficiently large to accommodate the proposed WWTW without an undue loss of high-value of agricultural land resulting. The proposed WWTW when maintained correctly is acceptable on the proposed site.			

9. Is the development the best practicable environmental option for this land/site?	**YES**	~~NO~~	Please explain

The proposed site is the only location where the municipality owns a parcel of land that is sufficiently distant from densely populated areas and sufficiently large to accommodate the proposed WWTW without an undue loss of high-value agricultural land resulting. The existing Kakamas WWTW receives wastewater from Kakamas and several surrounding small villages in volumes that far exceed the volumes that the WWTW was designed for. This has resulted in significant sewage pollution in Kakamas.

The municipality wishes to establish the proposed WWTW in Kakamas together with several smaller WWTWs in the surrounding villages to help in ending the sewage pollution in Kakamas that has been caused by the excessive wastewater volumes delivered to the existing Kakamas WWTW. The several smaller WWTWs in the surrounding villages will alleviate pressure on the existing overwhelmed Kakamas WWTW. This would significantly benefit society by helping to end the sewage pollution that is currently being endured by the community of Kakamas.

The constriction phase of the proposed Kakamas WWTW will yield further socio-economic benefits by providing employment opportunities to residents of the local area during the construction phase, thereby alleviating the unemployment situation in the area. In addition, the building materials that will be sourced from suppliers in the area will boost business for local entrepreneurs, thereby strengthening the local economy.

The potential negative impact of establishing the proposed development on terrestrial biodiversity is of low significance, as confirmed in the Terrestrial Biodiversity Study Report attached hereto as Appendix D1. The potential negative impact of the proposed development on freshwater resources is low as confirmed in the Freshwater Study Report attached hereto as Appendix D2. The potential negative impact of the proposed development on heritage-related resources is low, as confirmed in the Heritage Impact Study Report attached hereto as Appendix D3. The potential negative impact of the proposed development on agriculture is Low as confirmed in the Agricultural Compliance Statement attached hereto as Appendix D4.

In light of the significant socio-economic benefits of establishing the proposed development and the Low to Medium potential negative impacts anticipated upon implementation of the mitigation measures contained in the EMPr, the proposed Kakamas WWTW and associated infrastructure on the proposed site is arguably the best practicable environmental option.

10. Will the benefits of the proposed land use/development outweigh the negative impacts of it?	**YES**	~~NO~~	Please explain

Please refer to the answer given in Section 9 above

11. Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?	~~YES~~	**NO**	Please explain
The proposed WWTW and associated infrastructure is designed to help end the sewage pollution at the existing WWTW in Kakamas. The existing Kakamas WWTW receives wastewater from the town of Kakamas and several smaller surrounding villages and the total volume of the wastewater is approximately 11 times more than the WWTW was designed for. The existing Kakamas WWTW can therefore no longer effectively treat the wastewater received. It is noteworthy that the proposed WWTW is aimed at meeting the present and future wastewater treatment needs of Kakamas for many years to come and that applying for the required legal permits, establishing and then operating a WWTW is very costly. In view of this, it is very unlikely that other organisations or individuals will consider the establishment of the proposed WWTW and associated infrastructure as encouragement to also pursue their own WWTW in Kakamas.			
12. Will any person's rights be negatively affected by the proposed activity/ies?	~~YES~~	**NO**	Please explain
The wastewater from Kakamas and several surrounding villages is delivered to the existing Kakamas WWTW in volumes that far exceed the capacity of the WWTW. The community of Kakamas is enduring a significant sewage pollution problem as a result of the inadequately treated wastewater released by the overwhelmed Kakamas WWTW. The Kai !Garib Local Municipality wishes to establish a new WWTW at Kakamas as well as establish several smaller WWTWs in the surrounding villages to help in ending the sewage pollution caused at the existing overwhelmed Kakamas WWTW. These WWTWs will limit the amount of wastewater delivered to the existing Kakamas WWTW and thus reduce pressure on the overwhelmed WWTW. This will significantly benefit society by helping to end the sewage pollution in Kakamas and this is in keeping with the following constitutional right: "*24. Environment.-Everyone has the right-* *(a) to an environment that is not harmful to their health or well-being; and* *(b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that-* *(i) prevent pollution and ecological degradation;* *(ii) promote conservation; and* *(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development*".			
13. Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?	~~YES~~	**NO**	Please explain
The Kai !Garib Local Municipality is the Applicant and the proposed WWTW and associated infrastructure has no bearing on the urban edge.			
14. Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?	~~YES~~	**NO**	Please explain
The proposed WWTW and associated infrastructure is not included in the list of Strategic Infrastructure Projects.			

15. What will the benefits be to society in general and to the local communities?	Please explain

The wastewater from Kakamas and several surrounding villages is delivered to the existing Kakamas WWTW in volumes that far exceed the capacity of the WWTW. The community of Kakamas is enduring a significant sewage pollution problem as a result of the inadequately treated wastewater released by the overwhelmed Kakamas WWTW.

The Kai !Garib Local Municipality wishes to establish a new WWTW in Kakamas as well as establish several smaller WWTWs in the surrounding villages to help in ending the sewage pollution caused at the existing overwhelmed Kakamas WWTW. These WWTWs will limit the amount of wastewater delivered to the existing Kakamas WWTW and thus reduce pressure on the overwhelmed WWTW. This will significantly benefit society by helping to end the current sewage pollution in Kakamas.

The construction phase of the Kakamas WWTW will yield further socio-economic benefits by providing employment opportunities to local residents during the construction phase, thereby alleviating the unemployment situation in the municipal area. In addition, the merchandise for construction that will be sourced from the suppliers of building materials in the area will provide a boost to business in the area, thereby strengthening then local economy.

16. Any other need and desirability considerations related to the proposed activity?	Please explain

No. Please see above answer to Question 15.

17. How does the project fit into the National Development Plan for 2030?	Please explain

The establishment of the proposed WWTW and associated infrastructure aligns with *inter alia,* the following objectives that are contained in the National Development Plan for 2030[2]:

- Economy and Employment
    - The proposed development will provide socio-economic benefits by providing employment opportunities and by providing business to local the suppliers of building materials in the during the construction phase.
- Environmental Sustainability and Resilience
    - Ending the sewage pollution in Kakamas that has been caused by the existing WWTW receiving significantly more wastewater than its oxidation ponds were designed for. This will enable the community in Kakamas to enjoy the fulfilment of their constitutional right to an environmental that is not harmful to their well-being.

[2]National Development Plan, 2030. Accessed at https://www.gov.za/sites/default/files/Executive%20Summary-NDP%202030%20-%20Our%20future%20-%20make%20it%20work.pdf

18. Please describe how the general objectives of Integrated Environmental Management as set out in section 23 of NEMA have been taken into account.

The general objectives of Integrated Environmental Management, namely, to promote sustainable development through the integration of social, economic and ecological considerations as well as the maintenance of inter- and intra-generational equity have been taken into account through the following:

- The actual and potential impacts of the proposed activity on the environment, socio-economic conditions, and cultural heritage, relative to the proposed site have been identified and evaluated. The proposed mitigation measures, with a view to minimising negative impacts on the environment, socio-economic conditions, and any cultural heritage, while maximising benefits and promoting compliance with the principles of environmental management, were assessed.
- The potential environmental impacts of the establishing the proposed WWTW and associated infrastructure have been identified, assessed, and measures proposed to avoid or minimise the negative impacts.
- A public participation process that meets the minimum legal requirements has been followed for the Basic Assessment application to help ensure that the decision-making process takes into account the comments of members of the public and commenting authorities.

The environmental features of the proposed site have been considered and evaluated in the management and decision-making of the activity. An EMPr has been compiled (Appendix G, refers) for the proposed establishment of the WWTW and associated infrastructure and in the EMPr, the potential impacts with impact avoidance and mitigation measures to be adhered to during the implementation phase are specified.

19. Please describe how the principles of environmental management as set out in section 2 of NEMA have been taken into account.
The principles of environmental management, as per Section 2 of the NEMA have been taken into account. The principles include: – **Socio-economic development**: People and their needs have been placed at the forefront while serving their physical, psychological, developmental, cultural, and social interests – the establishment of the proposed WWTW and associated infrastructure is likely to provide employment opportunities for local residents and business opportunities for local entrepreneurs during the construction phase. This will help to somewhat alleviate the problem of poverty that is caused by unemployment in the administrative area of the Kai !Garib Local Municipality. The proposed WWTW and associated infrastructure will enable the wastewater of Kakamas to be treated adequately so that the community of the area can enjoy living in an environment that is free of sewage pollution. – **Sustainable development**: Development must be socially, ecologically and economically sustainable. The potential negative environmental impacts associated with establishing the proposed WWTW and associated infrastructure are of Medium to Low significance as indicated by the terrestrial biodiversity specialist in the specialist report attached hereto as Appendix D1, freshwater specialist report attached hereto as Appendix D2, heritage impact specialist in the report attached hereto as Appendix D3 and Agricultural Compliance Statement attached hereto as Appendix D4. The recommendations contained in the specialist study reports are included in the EMPr and will be implemented to help ensure that the potential negative impacts identified in the said reports are avoided or minimised. The potential impacts of the proposed WWTW will be minimised further through the implementation of the impact avoidance and mitigation measures contained in the EMPr (Appendix G, refers). In this way, the benefits associated with establishing the proposed WWTW and associated infrastructure that have been detailed in this BAR will be kept outweighing the potential negative impacts. – **Transparent Public Participation Process:** The public participation process followed gives I&APs an opportunity to view and provide comment on the Draft BAR before the BAR is finalised and submitted. The decision of the competent authority will be forwarded to all I&APs so that whomsoever wishes to appeal the decision may appeal.

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 (NEMA), Act No. 107 of 1998 and the Environmental Impact Assessment (EIA), Regulations of 2014 (as amended)	Applications for environmental authorisation must comply with the requirements specified in the NEMA and in the EIA Regulations	Northern Cape Provincial Department of Agriculture, Environmental Affairs, Rural Development and Land Reform	
National Water Act	Water Use Licence	Department of Water and Sanitation	
Northern Cape Nature Conservation Act, Act 9 of 2009	NCNCA Protected plant species located on the site	Department of Environment and Nature Conservation (DENC)	
National Heritage Resources Act (NHRA), Act 25 of 1999	A permit giving permission to develop is required according to Section 38(1) of the NHRA of 1999	South African Heritage Resources Agency (SAHRA)	

12. WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

a) Solid waste management

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

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

The general solid waste generated during construction will be consolidated on site during construction and disposed of at the nearest suitability licensed waste disposal site.

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

The general solid waste generated during construction will be consolidated on site during construction and disposed of at the nearest suitably licensed waste disposal site.

Will the activity produce solid waste during its operational phase?	**YES**	~~NO~~
If YES, what estimated quantity will be produced per month?		m^3
How will the solid waste be disposed of (describe)?		

The sludge that accumulates in the sedimentation ponds will be measured annually and the sludge sampled and tested. It is anticipated that approximately every seven years, the sludge will have accumulated to more than 50% of the capacity of the oxidation ponds and the sludge will be dried and removed from the oxidation ponds. If the results of laboratory testing indicate that the sludge is suitable for supplying to farmers, the dried sludge will be given to farmers. If the results of laboratory testing indicate that the sludge is unsuitable for usage as fertiliser, the sludge will be disposed of a suitably licensed waste disposal site that will be determined by the Kai !Garib Local Municipality together with the National Department of Water and Sanitation.

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

If the results of laboratory testing indicate that the sludge accumulated in the oxidation ponds is unsuitable for usage as fertiliser, the sludge will be disposed of a suitably licensed waste disposal site that will be determined by the Kai !Garib Local Municipality together with the National Department of Water and Sanitation.

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

If the results of laboratory testing indicate that the sludge accumulated in the oxidation ponds is unsuitable for usage as fertiliser, the sludge will be disposed of a suitably licensed waste disposal site that will be determined by the Kai !Garib Local Municipality together with the National Department of Water and Sanitation.

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?	~~YES~~	**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?	~~YES~~	**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?	~~YES~~	**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?	~~YES~~	**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?	~~YES~~	**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 wastewater, if any:

N/A.

c) Emissions into the atmosphere

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

d) Waste permit

Will any aspect of the activity produce waste that will require a waste permit in terms of the NEM:WA?	~~YES~~	**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~~	**NO**
If YES, is it controlled by any legislation of any sphere of government?	YES	NO

Describe the noise in terms of type and level:

The establishment of the proposed WWTW and associated infrastructure is expected to produce noise comparable to the noise that prevails on any other construction site. The noise will be limited to normal working hours on the approximately 650m initial section of the raw sewage pipeline next to the hospital and residential area. This will help to keep the noise impact close to the hospital and residential area from reaching levels of high significance.

Furthermore, potential noise-related impacts associated with establishing the proposed WWTW and associated infrastructure will be dealt with in the manner described in the EMPr.

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** / ~~NO~~

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

14. ENERGY EFFICIENCY

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

The treated wastewater will be gravitated via a pipeline towards the Orange River, thereby doing away with the need for electricity to pump the treated wastewater away.

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

Please see above.

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~~ **NO**

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
District Municipality	ZF Mgcawu District Municipality
Local Municipality	Kai !Garib Municipality
Ward Number(s)	
Farm name and number	Erf 1654, Kakamas South Settlement
Portion number	
SG Code	C03600060000165400000

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: Agriculture

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** ~~NO~~

1. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Alternative S1:

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~~

Alternative S2 (if any):

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

Alternative S3 (if any):

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	**X**
2.2 Plateau		2.5 Open valley		2.8 Dune	
2.3 Side slope of hill/mountain		2.6 Plain		2.9 Seafront	
2.10 At sea					

3. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

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

	Alternative S1:		**Alternative S2 (if any):**		**Alternative S3 (if any):**	
Shallow water table (less than 1.5m deep)	~~YES~~	**NO**	YES	NO	YES	NO
Dolomite, sinkhole or doline areas	~~YES~~	**NO**	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	~~YES~~	**NO**	YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil	~~YES~~	**NO**	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	~~YES~~	**NO**	YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)	~~YES~~	**NO**	YES	NO	YES	NO
Any other unstable soil or geological feature	~~YES~~	**NO**	YES	NO	YES	NO
An area sensitive to erosion	~~YES~~	**NO**	YES	NO	YES	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 scattered aliens**[E]	~~Natural veld with heavy alien infestation~~[E]	~~Veld dominated by alien species~~[E]	~~Gardens~~
~~Sport field~~	~~Cultivated land~~	~~Paved surface~~	~~Building or other structure~~	**Bare soil**

Please see Appendix B for Site Photographs and further descriptions of site vegetation.

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.

5. SURFACE WATER

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

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

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

The proposed site is within 32m of some of the typical non-perennial drainage lines and their tributaries that exist in most parts of the Northern Cape.

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~~	~~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

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

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

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

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:	**YES**	~~NO~~

According to the Heritage Impact Assessment (Appendix D3 of the Draft BAR, refers), the following heritage resources exist on the proposed site:

Three instances (KSS/1654/001, KSS/1654/004, and KSS/1654/005) of Middle Stone Age (MSA) lithic scatters/occurrences were recorded. These resources are given a 'General' Protection C (Field Rating IVC) and are considered to be of low significance. The impact is negligible. Therefore, no further mitigation is recommended.

One instance of a possible grave was recorded and a cemetery. All graves are of High significance and should be protected. However, none of the grave sites fall within the proposed development footprint, so neither will be impacted. Although the chance of impact occurring is extremely low (less than a 25% chance of occurrence), any possible impact can be avoided by implementing a precautionary 30m buffer (no-go) zone around the grave sites. After mitigation this would have a Low negative significance impact.

It is stated in the HIA that an Exemption for a Palaeontological Impact Assessment is recommended for the WWTW at Kakamas South Settlement, as the proposed site *"is underlain by unfossiliferous Riemvasmaak Gneiss (MRM) as well as the Kenhardt Magmatite (MKM) and potentially fossiliferous Quaternary alluvium (QG). However, the Quaternary sediments are not highly fossiliferous*". However, If during construction, 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 must be alerted as per section 35(3) of the NHRA. If unmarked human burials are uncovered, the SAHRA must be alerted immediately as per section 36(6) of the NHRA. Depending on the nature of the finds, a professional archaeologist or palaeontologist must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources are of archaeological or palaeontological significance, a Phase 2 rescue operation may be required, subject to permits issued by SAHRA.

The potential heritage-related impact of establishing the proposed WWTW on the proposed site is therefore of low significance upon implementation of the required impact mitigation measures.

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:

N/A

Will any building or structure older than 60 years be affected in any way?
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?

~~YES~~	**NO**
YES	~~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.

Level of unemployment:

According to the Kai !Garib Local Municipality Integrated Development Plan 2020 – 2021, the working age population in Kai !Garib in 2018 was 51 000, increasing at an average annual rate of 1.21% since 2008. For the same period the working age population for ZF Mgcawu District Municipality increased at 1.81% annually, while that of Northern Cape Province increased at 1.68% annually. South Africa's working age population has increased annually by 1.50% from 32.1 million in 2008 to 37.2 million in 2018.

In 2018 the labour force participation rate for Kai !Garib was at 68.1% which is slightly lower when compared to the 71.5% in 2008. The unemployment rate is an efficient indicator that measures the success rate of the labour force relative to employment. In 2008, the unemployment rate for Kai !Garib was 11.2% and increased overtime to 12.0% in 2018. The gap between the labour force participation rate and the unemployment rate increased which indicates a positive outlook for the employment within Kai !Garib Local Municipality.

Economic profile of local municipality:

According to the Kai !Garib Local Municipality Integrated Development Plan 2020 – 2021, has a GDP of R 5.62 billion in 2018 (up from R 3.05 billion in 2008), the Kai !Garib Local Municipality contributed 22.80% to the ZF Mgcawu District Municipality GDP of R 24.6 billion in 2018 increasing in the share of the ZF Mgcawu from 23.60% in 2008. The Kai !Garib Local Municipality contributes 5.72% to the GDP of Northern Cape Province and 0.12% the GDP of South Africa which had a total GDP of R 4.87 trillion in 2018 (as measured in nominal or current prices). It's contribution to the national economy stayed similar in importance from 2008 when it contributed 0.13% to South Africa, but it is lower than the peak of 0.13% in 2008.

Level of education:

According to the Kai !Garib Local Municipality Integrated Development Plan 2020 – 2021, the number of people without any schooling decreased from 2008 to 2018 with an average annual rate of -3.17%, while the number of people within the 'matric only' category, increased from 6,420 to 8,920. The number of people with 'matric and a certificate/diploma' increased with an average annual rate of 1.35%, with the number of people with a 'matric and a Bachelor's' degree increasing with an average annual rate of 0.07%. Overall improvement in the level of education is visible with an increase in the number of people with 'matric' or higher education (Table 1).

Table 1: Highest level of education : Age 15+ Kai !Garib, ZF Mgcawu, Norther Cape and National Total, 2018 [Numbers]

	Kai !Garib	ZF Mgcawu	Northern Cape	National Total	Kai !Garib as % of district municipality	Kai !Garib as % of province	Kai !Garib as % of national
No schooling	3,430	11,600	65,300	2,250,000	*29.5%*	*5.3%*	*0.15%*
Grade 0-2	1,500	4,750	19,300	685,000	*31.7%*	*7.8%*	*0.22%*
Grade 3-6	7,620	21,500	97,800	3,110,000	*35.4%*	*7.8%*	*0.25%*
Grade 7-9	14,500	43,300	177,000	6,060,000	*33.6%*	*8.2%*	*0.24%*
Grade 10-11	11,600	38,900	170,000	8,620,000	*30.0%*	*6.8%*	*0.14%*
Certificate / diploma without matric	194	748	3,740	178,000	*26.0%*	*5.2%*	*0.11%*
Matric only	8,920	43,900	197,000	10,700,000	*20.3%*	*4.5%*	*0.08%*
Matric certificate / diploma	1,470	6,780	37,900	2,200,000	*21.7%*	*3.9%*	*0.07%*
Matric Bachelors degree	505	3,250	19,500	1,600,000	*15.5%*	*2.6%*	*0.03%*
Matric Postgrad degree	138	934	6,130	726,000	*14.8%*	*2.3%*	*0.02%*

Source: IHS Markit Regional eXplorer version 1692

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 50 000 000	
What is the expected yearly income that will be generated by or as a result of the activity?	The proposed WWTW is not for generating income	
Will the activity contribute to service infrastructure?	**YES**	~~NO~~
Is the activity a public amenity?	**YES**	~~NO~~
How many new employment opportunities will be created in the development and construction phase of the activity/ies?	30 skilled and 60 unskilled	
What is the expected value of the employment opportunities during the development and construction phase?	R4 000 000	
What percentage of this will accrue to previously disadvantaged individuals?	75%	
How many permanent new employment opportunities will be created during the operational phase of the activity?	03 skilled and 03 unskilled	
What is the expected current value of the employment opportunities during the first 10 years?	R3 000 000	
What percentage of this will accrue to previously disadvantaged individuals?	75%	

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 proposed WWTW is located within an ESA, with associated infrastructure extending into a CBA 2 identified on SANBI BGIS (refer to Figure 2 below)

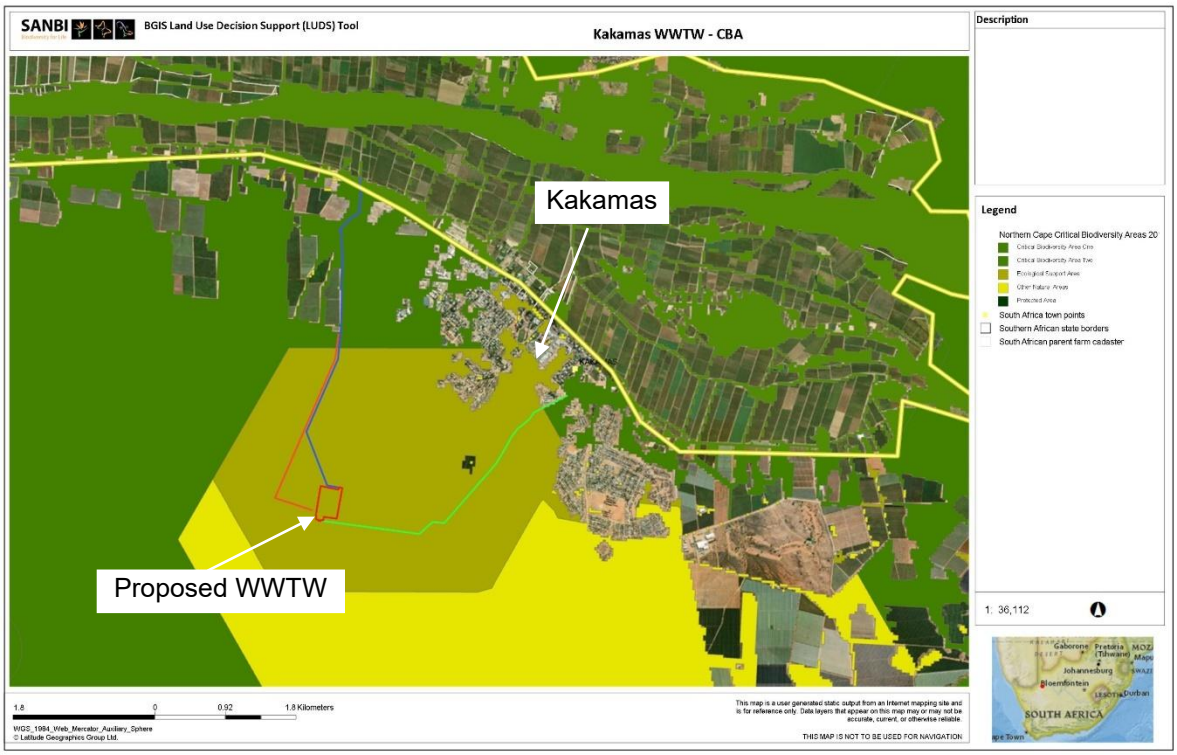

Figure 2: SANBI BGIS image of the CBAs in and around Kakamas

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	%	
Near Natural (includes areas with low to moderate level	80%	Please refer to Terrestrial Biodiversity Compliance Statement (**Appendix D1**).

of alien invasive plants)		
Degraded (includes areas heavily invaded by alien plants)	%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)	20%	Please refer to Terrestrial Biodiversity Compliance Statement (**Appendix D1**).

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	~~YES~~	**NO**	~~UNSURE~~	~~YES~~	**NO**	~~YES~~	**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)

TERRESTRIAL BIODIVERSITY

The Animal Species Theme received a High Sensitivity rating on the DFFE Screening Tool due to the potential presence of aves species, Lanner Falcon (*Falco biarmicus*) and a Medium Sensitivity rating Ludwig's Bustard (*Neotis ludwigii*). According to the Biodiversity Assessment (**Appendix D1**), given the location of the study area (near the urban edge) and the fact that the Ludwig's Bustard had not been observed in this pentad,(as per SABAP2 data set), it is considered highly unlikely that the proposed development will result in any significant additional impact on the breeding or feeding patterns of species as a result the sensitivity rating for this project is considered Low Sensitive.

According to the Biodiversity Assessment (Appendix D1), in accordance with the 2018 Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006), the development will only impact on one vegetation type, namely Bushmanland Arid Grassland, a vegetation type considered "Least Threatened" in terms of the NEM: BA "national list of ecosystems that are threatened and in need of protection" (GN 1002, December 2011).

The Biodiversity Assessment (Appendix D1) further states that the landscape is relatively homogenous and does not contain any significant biophysical features that might have resulted in special habitats for fauna or flora.

The Plant Species Theme received a Medium Sensitivity rating on the DFFE Screening Tool due to the potential presence of 144 sensitive species. According to the Biodiversity Assessment (**Appendix D1**), the following threatened and protected plant species were identified:

Red list of South African plant species: The Red List of South African Plants online provides up to date information on the national conservation status of South Africa's indigenous plants (SANBI, 2020).

- *Hoodia gordonii,* one individual was observed away from the WWTW, but more is expected in the larger area. It is possible that a few individuals might be impacted.
- Sensitive species 144, two individuals were observed in the general location of the proposed new WWTW

NEM:BA protected plant species: The National Environmental Management: Biodiversity Act, Act 10 of 2004, provides for the protection of species through the "Lists of critically endangered, endangered, vulnerable and protected species" (GN. R. 152 of 23 February 2007).

- *Hoodia gordonii* (also protected in terms of NEM: BA)

NFA Protected plant species: The National Forests Act (NFA) of 1998 (Act 84 of 1998) provides for the protection of forests as well as specific tree species (as updated).

- *None*

NCNCA Protected plant species: The Northern Cape Nature Conservation Act 9 of 2009 (NCNCA) came into effect on the 12th of December 2011, and provides for the sustainable utilization of wild animals, aquatic biota, and plants. Schedule 1 and 2 of the Act gives extensive lists of specially protected and protected fauna and flora species in accordance with this act. NB. Please note that all indigenous plant species are protected in terms of Schedule 3 of this act (e.g., any work within a road reserve).

- *Aloe claviflora (*NCNCA Schedule 2 protected)
- *Sensitive species 144* (also protected in terms of NCNCA Schedule 1)
- *Boscia foetida (*NCNCA Schedule 2 protected)
- *Cynanchum viminale (*NCNCA Schedule 2 protected)
- *Euphorbia gariepina (*NCNCA Schedule 1 protected)
- *Euphorbia spinea (*NCNCA Schedule 1 protected)
- *Hoodia gordonii* (also protected in terms of NCNCA Schedule 1)
- *Mesembryanthemum* cf. *subnodosum* (=*Psilocaulon*), *(*NCNCA Schedule 2 protected)

According to the Biodiversity Assessment (**Appendix D1**), see below Table 1 for Protected plant species with impact minimisation recommendations.

Table 1: Protected plant species with impact minimisation recommendations.

NO.	SPECIES NAME	COMMENTS	RECOMMENDATIONS
1.	*Aloe claviflora* **Schedule 2 protected.** **(All plants in this Family)**	Several individuals were observed throughout the site. This is a relatively common and widespread species with a red-list status of Least Concern.	**Search & rescue** Even though a widespread species it is recommended that as many of these plants as possible are transplanted to areas that will not be disturbed (within the same property). **A NCNCA Permit application must be obtained for the impacts on this species.**
2.	*Sensitive species 144* **Schedule 1 protected.**	Two individuals were observed in the general location of the proposed new WWTW.	**Search & rescue** The footprint layout should aim to avoid any impact on these plants, but if not possible all individuals must be transplanted outside of the footprint and a watering program must be implemented until they have established themselves. **A NCNCA Permit application must be obtained for the impacts on this species**
3.	*Boscia foetida* **Schedule 2 protected**	Several multi-stemmed shrub was observed throughout the property, and it is likely that some of these plants will be impacted (Photo 18).	No search & rescue is proposed. *Boscia* species seldom transplant successfully, because of their extensive and deep root system. Where possible the footprint layout should aim to avoid as many of these plants as possible. **A NCNCA Permit application must be obtained for the removal of any individuals.**
4.	*Cynanchum viminale* **Schedule 2 protected (All plants in this Family)**	Several individual were observed throughout the site, and it is likely that some of them will be impacted. However, it is a common and widespread species with a red-list status of Least Concern.	No Search & rescue proposed. Topsoil should be re-used for the rehabilitation of disturbed areas, which will allow for seed store protection). **A NCNCA Permit application must be obtained for the impacts on this species**
5.	*Euphorbia gariepina* **Schedule 1 protected** **(All plants in this Genus)**	This species was relatively common in certain areas of the site and some individuals might be impacted. However, it is a widespread species with a red-list status of Least Concern.	**Search & rescue.** Even though a widespread species it is recommended that as many of these plants as possible is transplanted to areas that will not be disturbed (within the same property). **A NCNCA Permit application must be submitted for the removal of these plants.**
6.	*Euphorbia spinea* **Schedule 1 protected** **(All plants in this Genus)**	This species was relatively common throughout the site and some individuals are likely to be impacted. Although never common, it is a widespread species with a red-list status of Least Concern.	**Search & rescue.** Even though a widespread species it is recommended that as many of these plants as possible is transplanted to areas that will not be disturbed (within the same property). **A NCNCA Permit application must be submitted for the removal of these plants.**
7.	*Hoodia gordonii* ***NEMBA protected species*** ***NCNCA* Schedule 1 protected.**	One individual was observed away from the WWTW, but more is expected in the larger area. It is possible that a few individuals might be impacted.	**Search & rescue** The footprint layout should aim to avoid any impact on these plants, but if not possible all individuals must be transplanted outside of the footprint and a watering program must be implemented until they have established themselves. **A NCNCA Permit application must be obtained for the impacts on this species**
8.	*Mesembryanthemum cf. subnodosum (=Psilocaulon)* ***NCNCA* Schedule 2 protected** *(all species in this Family protected by default)*	Occasionally observed, mostly in disturbed areas or near drainage lines. A common widespread species that is often considered a disturbance indicator species.	No Search & Rescue proposed. Topsoil should be re-used for the rehabilitation of disturbed areas, which will allow for seed store protection). **NB: A NCNCA Permit application will have to be obtained for potential impacts on this species.**

The proposed WWTW and associated infrastructure footprint overlaps a Critical Biodiversity Area (CBA) 2 and thus receives a Very High Sensitivity rating on the DFFE Screening Tool for Terrestrial Biodiversity. According to the 2016 Northern Cape critical biodiversity areas maps (Figure 2), the study area is located within an ecological support area (ESA), this was confirmed in the Biodiversity Assessment (**Appendix D1**). The property itself is mostly enclosed by cultivated lands and the Kakamas urban area, and isolated koppies do provide landscape links. As a result, the impact on

conservation priority areas, according to the Biodiversity Assessment (**Appendix D1**) is expected to be Low Negative.

The Terrestrial biodiversity assessment indicates that because of the location and least threatened status of the vegetation, even the cumulative impact will be Low. According to this assessment, the main impacts associated with the proposed development will be:

- The potential impact on **plant species** of conservation concern (SoCC).
- The potential impact on <10ha of natural veld within an ESA (an ecological support area).
- The less-likely potential impacts on vegetation type, connectivity and fauna and avi-fauna.

No fatal flaws or any other obstacles were found with respect to the flora, vegetation, fauna, and terrestrial biodiversity. Even with minimum mitigation it is considered highly unlikely that the development will contribute significantly to any of the following:

- Significant loss of vegetation type and associated habitat.
- Loss of ecological processes (e.g., migration patterns, pollinators, river function etc.) due to construction and operational activities.
- Loss of local biodiversity and threatened species.
- Loss of ecosystem connectivity.

The findings of this assessment suggests that the relative terrestrial biodiversity theme sensitivity should be Low Sensitive (not Very High Sensitive as suggested in the DFFE screening report).

AQUATIC ECOLOGY

The proposed site overlaps five sub-catchments that are traversed by drainage lines and many criss-crossing tributaries as is characteristic over much of the landscape in the Northern Cape Province. The five sub-catchments overlapping the proposed site are in a more disturbed state closer to the Orange River and are in a more natural state further off from the river. The boundaries of the sub-catchments are indicated in navy blue and the drainage lines are indicated in light blue in Figure 3 below.

It is evident in Figure 3 above that the proposed site for the WWTW is intersected by a drainage line that flows in a north to south direction through Sub-catchment 1. The drainage line flows mostly along the western parts of Sub-catchment 1 on its way to the Orange River and is supplied with water by several tributaries from the east as well as a tributary from the west. The tributary from the west is straightened and engineered as is the case with the drainage line closer to where the drainage line crosses the N14 National Road. The drainage line near the southern verge of the N14 Regional Road is overgrown with black thorn, whereas it is reeds that dominate the drainage line on the northern roadside.

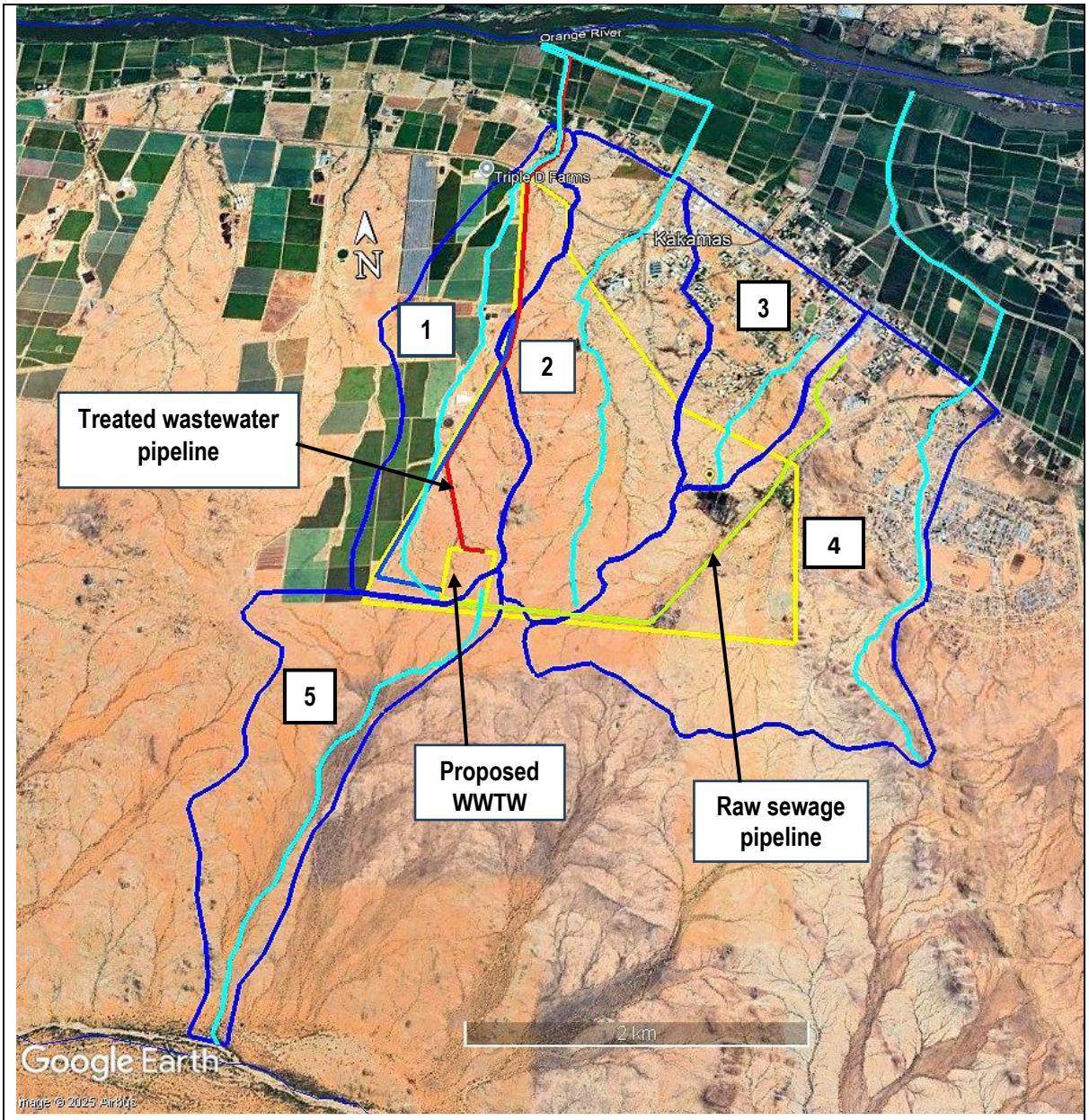

Figure 3: View of the five sub-catchments as well as drainage lines overlapping the proposed site

The drainage line of Sub-catchment 2 flows in a north to south direction through the middle of the Remainder of 1654, Kakamas South and divides the said property into eastern and western portions of almost equal size. This drainage line is supplied with water by tributaries from both the east and west and is bigger than the drainage line of Sub-catchment 1. The anthropogenic disturbance closer to the Orange River is higher, consisting of vineyards, farm roads, canals and flood control walls as well as a section where the drainage line is engineered to turn almost 90°.westwards and follow the boundary of a vineyard.

The drainage line in Sub-catchment 4 flows in a south to north winding manner close to the eastern boundary of the sub-catchment and continues on its way to the Orange River. The proposed pipeline for conveying raw sewage from the town of Kakamas extends southwards in close proximity to the western boundary of this sub-catchment and continues past the existing WWTW. The pipeline then turns westwards on its approach to the northern boundary of the sub-catchment and continues to its end-point at the proposed WWTW.

The impacts within this sub-catchment include the proliferation of black thorn at the existing WWTW and the inadequately treated wastewater that flows in an earthen canal towards the town of Kakamas. The canal passes underneath Voortrekker Road, *i.e.*, one of the main roads through Kakamas and through a set of pipe culverts and then a concrete canal to Orange River.

The Kakamas solid waste disposal site has also resulted in major impacts in Sub-catchment 4, together with the large quantities of waste dumped unlawfully on the side of the road that leads from town and past the existing WWTW. In addition, a significant impact within the sub-catchment has been caused by a significant part of Kakamas occupying in the northeastern corner of the sub-catchment.

The very upper reach of the drainage line in Sub-catchment 5 extends onto the proposed site of the WWTW and then flows southwards to join the Hartbees River. This sub-catchment seems to have been impacted the least, with the noted impacts being only grazing by livestock and footpaths caused by trampling.

The proposed WWTW and associated infrastructure do not extend into Sub-catchment 3 and so this sub-catchment will not be dealt with.

SECTION C: PUBLIC PARTICIPATION

1. ADVERTISEMENT AND NOTICE

Publication name	NoordkaapBulletin	
Date published	10 April 2025	
Site notice position	**Latitude**	**Longitude**
	28° 46' 37,28" S	20° 35' 50,09" E
Date placed	09 April 2025	

Include proof of the placement of the relevant advertisements and notices in Appendix E3.

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.

Pre-application PPP (Refer to Appendix E)

- An initial register of possible interested and affected parties (I&APs) was compiled (Appendix E1)
- A site visit was conducted on 09 April 2025 to familiarise with the proposed site and nearby surrounding area and identify environmental sensitivities associated with the proposed site (Appendix B).
- On 09 April 2025, posters were placed on site as well as at the Kakamas Agrimark, Kai !Garib Kakamas Municipal Building and the Keimoes Municipal Building (Appendix E2).
- An advertisement was placed in a local newspaper *i.e.*, the *Noordkaap Bulletin* which was published on 10 April 2025 (Appendix E3).
- On 16 April 2025 an initial email notifying them of the intent to develop was sent to all I&APs (Appendix E4).
- The comments received in response to the initial PPP notices are included in the Comments-Responses Report, together with the responses thereto.

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)

Include proof that the key stakeholder received written notification of the proposed activities as Appendix E4. 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
Please refer to Appendix E5	Please refer to Appendix E5

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 E5.

5. AUTHORITY PARTICIPATION

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel.:	e-mail	Postal address
Department: Cooperative Governance, Human Settlements and Traditional Affairs	Ms Gladys Botha	053 830 9513	gbotha@ncpg.gov.za	Private Bag X5005, Kimberley, 8300
Department: Health Services:	Ms Gugulethu Matlaopane	053 830 2148	nchealthhr@ncpg.gov.za	Private Bag X5049, Kimberley, 8300
Department: Roads and Public Works:	M> Kgomongwe	0538392241	mkgomongwe@ncpg.gov.za	P. O. Box 3132, Kimberley, 8300
Department: Transport, Safety and Liaison:	Mr Lesego Wolfe	053 839 1702	lwolfe@ncpg.gov.za	Private Bag X1368, Kimberley, 8300
Chief Forester: NFA Regulations Dept of Forestry and Environment	Ms J. Mans	082 808 2737	Jmans@dffe.gov.za	26 Olien Street, Louisvaleroad, Upington, 8801
Dept of Water and Sanitation	Ms A. Hlengani	053 7731239	HlenganiA@dws.gov.za	Private Bag X6101, Kimberley, 8300
SAHRA	Ms Natasha Higgitt		nhiggitt@sahra.org.za	
Agri NC	Ms Nicole Jansen	053 832 9595	henning@agrink.co.za	2 Bebington St, Monument Heights, Kimberley, 8301
DFFE Biodiversity Conservation	Mr Seoka Lekota		BCAdmin@environment.gov.za	
Eskom	Mr John Geeringh	011 516 7233	john.geeringh@eskom.co.za	Eskom Transmission, Megawatt Park P.O. Box 1091, Johannesburg, 2001
South African National Roads Agency	Ms Nicole Abrahams	021 957 4602	AbrahamsN@nra.co.za	1 Havenga Street, Oakdale, Bellville, 7530

Civil Aviation Authority (CAA)	Ms Evelyn Shogole	083 451 2663	environment@caa.co.za	North Wing, 2nd Floor, Oval Business Park, Freight Road, Cape Town International Airport, Cape Town, 7525
ZF Mgcawu District Municipality	Tinus Galloway		tgalloway@zfm-dm.gov.za	

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 E1.

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.

Activity	Impact summary	Significance	Proposed mitigation
Alternative 1 (preferred alternative)			
	Direct impacts:		
	Biodiversity	Significance after mitigation	Proposed mitigation
	Potential impact on special habitats (e.g. true quartz or "heuweltjies")	Very Low (Negative)	No special habitats observed, apart from two rocky hills, which will not be impacted by the proposed development.
	Loss of vulnerable or endangered vegetation and associated habitat.	Low (Negative)	- All construction should be done in accordance with an approved construction phase Environmental Management Plan (EMP) approved by the Northern Cape Department of Environmental Affairs. - A suitably qualified Environmental Control Officer should be appointed to monitor the construction phase in terms of the EMP and any other conditions pertaining to specialist studies. - Before any work is done the footprint must be clearly demarcated. The demarcation must aim at minimising impacts outside of the approved development footprint. - The "Search & Rescue" recommendations as per given in Table 10 in the Terrestrial Biodiversity Impact Report (Appendix D1) must be implemented: ○ A botanist or a suitably qualified ECO must inspect the demarcated routes for plants SoCC that needs to be ○ searched & rescued . ○ Search & Rescue must include an aftercare period, during which the plants are watered from time to time to give them the best possible chance of survival.
	Potential impact on protected areas, CBAs, ESAs or Centres of Endemism. The vegetation itself is not vulnerable or endangered and the site degraded	Low (Negative)	
	Potential loss of ecological migration corridors.	Low (Negative)	
	Potential impact on threatened or protected plant species.	Very Low (Negative)	
	Potential impact on mammals, reptiles, amphibians	Very Low (Negative)	
	Potential impact on AviFauna Site overlaps with the known distribution range of Neotis ludwigii (Ludwig's Bustard), due to site location within urban edge no significant impact on breeding or feeding patterns is likely.	Very Low (Negative)	

Activity	Impact summary	Significance	Proposed mitigation
			○ In addition, all efforts should be made to protect all mature indigenous trees (e.g., Pappea capensis individuals). ○ Northern Cape Nature Conservation Act permit must be obtained for the potential impacts on the NCNCA protected species. ○ In addition, a NEM:BA permit must be obtained, should any of the Hoodia gordonii individuals had to be re-planted. - All alien invasive species within the footprint and its immediate surroundings must be removed responsibly. ○ Care must be taken with the eradication method to ensure that the removal does not impact or lead to additional impacts (e.g., spreading of these species due to incorrect eradication methods); ○ Care must be taken to dispose of alien plant material responsibly. - An integrated waste management approach must be implemented during construction and all waste within the footprint area must be removed and disposed to the local Municipal waste disposal site. - Construction related general and hazardous waste may only be disposed of at Municipal approved waste disposal sites.
	Freshwater Resources	Significance after mitigation	Proposed mitigation
	Construction of the new WWTW and cleaning up after construction: impact on drainage lines from levelling the ground, digging of trenches for foundations	Low (Negative)	- Preserve drainage lines as much as possible and prevent litter and rubbish from entering them - Maintain buffer zones as much as possible between the proposed development and drainage lines - Limit construction work as much as possible to the dry season in order to lower the likelihood of stormwater washing away loose soil down the on-site drainage lines
	WWTW Operation: Raw sewage and inadequately treated wastewater effluent ending up in the aquatic environment	Low (Negative)	- Establish containment capacity for mishaps and spills - Maintain the WWTW and associated pipelines - Monitor effluent quality. - Keep surrounding environment tidy
	Heritage	Significance after mitigation	Proposed mitigation
	Potential impact on Middle Stone Age (MSA) lithic scatters	Low (Negative)	Please refer to the EMPr
	Potential impact on Graves	Low (Negative)	A 30m Cautionary Safety/No-Go Buffer Zone should be imposed upon a possible

Activity	Impact summary	Significance	Proposed mitigation
			unconfirmed grave, recorded (KSS/1654/007) as well as a cemetery (KSS/1468/008).
	Palaeontology	Negligible	- If Palaeontological resources are uncovered on the proposed site, the Chance Find Protocol must be implemented immediately. Fossil discoveries must be protected and the ECO/site manager must report to the South African Heritage Resources Agency (SAHRA) so that mitigation (recording and collection) can be carried out. - Before any fossil material can be collected from the development site, the specialist would need to apply for a collection permit from SAHRA. Fossil material must be housed in an official collection (museum or university), while all reports and fieldwork should meet the minimum standards for palaeontological impact studies proposed by SAHRA (2012). .
	Agriculture	Significance after mitigation	Proposed mitigation
	Loss of future agricultural production potential.	Low (Negative)	As per the agricultural statement, the proposed site appears to have low agricultural potential and thus no mitigation would be required
	Visual	Significance after mitigation	Proposed mitigation
	Site may not be aesthetic amid natural background.	Low (Negative)	This impact cannot be avoided. Mitigation measures as per the EMP.
	Noise	Significance after mitigation	Proposed mitigation
	Noise will be generated during the construction phase.	Low (Negative)	- Any noise generated by construction activities will be a temporary impact however, the following mitigation measures will be implemented: - A complaint register to be maintained on-site. Any complaints received must be responded to and rectified accordingly. The ECO must be notified of any complaints. - All construction vehicles must be fitted with standard silencers. All silencers must be maintained. All machinery used on site must have suppressors. - Working hours must be limited to and strictly adhered to standard daylight working hours (08h00-17h00).
	Dust	Significance after mitigation	Proposed mitigation

Activity	Impact summary	Significance	Proposed mitigation
	Dust will be generated during the construction of the proposed development.	Low (Negative)	The following mitigation measures must be implemented: - Stockpiled material must be covered with a plastic sheet, tarp or similar material in windy conditions; - The proposed site and the roads leading to the proposed site must be sprayed with water to reduce construction related dust;
	Indirect impacts:		
	Socio-economic	Significance after mitigation	Proposed mitigation
	Creation of employment opportunities and enhancement of business opportunities for building supplies companies .	Low (Positive)	Mitigation is not required
	Traffic	Significance after mitigation	Proposed mitigation
	Increase in trucks and other construction vehicles.	Low (Negative)	- The site must be made easily accessible to all construction traffic travelling along main routes; - - If required, point's men must be in attendance to direct traffic when heavy vehicles are accessing or leaving the site to ensure that there are no accidents.
	Cumulative impacts:		
	Biodiversity	Significance after mitigation	Proposed mitigation
	Cumulative impact associated with proposed activity.	Low (Negative)	As above Biodiversity impact mitigation measures
	Freshwater Resources	Significance after mitigation	Proposed mitigation
	Orange and Hartbees River conservation value considering the extent, duration, severity and likelihood of impact	Low (Negative)	As above freshwater mitigation measures
	Drainage lines conservation value considering the extent, duration, severity and likelihood of impact	Low (Negative)	As above freshwater mitigations
	Heritage	Significance after mitigation	Proposed mitigation
	Cumulative impact associated with proposed activity.	Low (Positive)	Cumulatively, there will not be a drastic loss to heritage resources for the region if the recommended impact mitigation measures contained in the EMPr are adhered to. The heritage resources recorded during the assessment add minimal understanding of the wider archaeological, historical, and cultural landscape, even though they are site-specific.
	Socio-economic	Significance after mitigation	Proposed mitigation
	Enhanced supply of bulk services	Low (Positive)	No mitigation required.
	Smell	Significance after mitigation	Proposed mitigation

Activity	Impact summary	Significance	Proposed mitigation
	Increased smell	Low (Negative)	Obnoxious odours commonly caused from Hydrogen Sulphide gas from conventional Oxidation Pond systems, like the WWTW proposed at Kakamas is not likely to be an issue due to the placement, more than 500m from residential areas.
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
~~**Alternative 2**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
~~**Alternative 3**~~			
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
	~~***Direct impacts:***~~		
	~~***Indirect impacts:***~~		
	~~***Cumulative impacts:***~~		
No-go option			
	Direct impacts:		
	This would mean abandoning the proposal of establishing the WWTW and associated infrastructure on the Remainder of Erf 1654, Kakamas South Settlement and the site would remain in its current state. Wastewater from Kakamas and surrounding villages would continue to overwhelm the existing Kakamas WWTW and the sewage pollution situation currently endured by the community of Kakamas would remain.	High (Negative)	Adopt the Preferred alternative
	Indirect impacts:		
	Cumulative impacts:		

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.

Alternative A (preferred alternative)

The establishment of the proposed WWTW and associated infrastructure will provide employment opportunities during the construction phase, thereby helping to alleviate the unemployment situation in the area. The construction phase will also enhance business for building materials suppliers and benefit the local economy.

The proposed WWTW and associated infrastructure is designed to end the sewage pollution that has been caused by the excessive amounts of wastewater being delivered to the existing WWTW in Kakamas. The existing Kakamas WWTW receives wastewater from the town of Kakamas and from several smaller surrounding villages in the area and the wastewater is approximately 11 times more than the oxidation ponds at the WWTW were designed for. This situation has resulted in significant environmental pollution. It is predicted that as the population of the area grows, the volumes of wastewater currently overwhelming the Kakamas WWTW will increase and thus the quality of treated wastewater released by the Kakamas WWTW will worsen and result in even higher levels of pollution.

The Kai !Garib Local Municipality wishes to establish a new WWTW in Kakamas to help end the sewage pollution caused by excessive volumes of wastewater being delivered to the existing Kakamas WWTW. The proposed WWTW will reduce pressure on the existing overwhelmed Kakamas WWTW and this will significantly benefit society by helping to end the sewage pollution problem in Kakamas.

In addition, the potential negative terrestrial biodiversity impacts of the proposed development are low (Appendix D1, refers). The potential negative freshwater ecological impacts are Medium to low upon implementation of the impact mitigation measures contained in the Freshwater Impact Study Report (Appendix D2, refers) and the EMPr. The potential negative heritage-related impacts are low (Appendix D3, refers) The potential negative impacts on agriculture are low (Appendix D4, refers). The potential negative visual impact of the proposed development is low, as the proposed WWTW is located approximately 1.5km away from the closest densely populated area and the proposed development is not tall and conspicuous.
In view of the above, the likely benefits of establishing the proposed WWTW and associated infrastructure far outweigh the potential negative impacts.

It is therefore suggested that the competent authority authorise the establishment of the proposed WWTW and associated infrastructure in Kakamas.

Alternative B

Alternative C

No-go alternative (compulsory)

This alternative entails abandoning the proposal to establish the WWTW and associated infrastructure on proposal on Erf 1654, Kakamas South Settlement and allowing the proposed site to remain in its current state.

It is noteworthy that the oxidation ponds at the existing Kakamas WWTW were designed to receive much smaller amounts of wastewater than the WWTW is currently receiving and so the WWTW is no longer treating wastewater effectively. This situation has resulted in significant environmental pollution in Kakamas. It is anticipated that that as the population of Kakamas grows, the volumes of wastewater delivered to the existing WWTW will accordingly increase and outstrip the wastewater treatment

capacity of the existing WWTW even further. If this happens, the quality of treated wastewater in Kakamas will decline further over time, resulting in worse sewage pollution in Kakamas.

The 'no-go' alternative is clearly undesirable, especially considering that authorising the Preferred alternative will assist in ending the sewage pollution problem in Kakamas and that any potential negative impacts of the authorised development are likely to remain Medium to Low upon the implementation of the impact mitigation measures contained in the EMPr.

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~~	**NO**

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).

The Draft BAR must first be made available to Interested and Affected Parties for public participation as per the EIA Regulations of 2014 (as amended). The comments received during the public participation process must then be responded to adequately in a Comments-Responses Report and taken into account in the BAR before the BAR can be submitted to the competent authority for a decision on the application.

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.

- All construction must take place in accordance with an approved construction and operational phase Environmental Management Programme (EMPr).
- A suitably experienced ECO must be appointed to ensure compliance with the conditions of the environmental authorisation and the EMPr.
- The recommendations contained in the Terrestrial Biodiversity Impact Report attached hereto as Appendix D1 must be implemented
- The recommendations contained in the Freshwater Impact Study Report attached hereto as Appendix D2 must be implemented
- The recommendations contained in the Heritage Impact Report attached hereto as Appendix D3
- All the conditions contained in the environmental authorisation must be complied with.

Is an EMPr attached?	**YES**	~~NO~~

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.

_____

NAME OF EAP

_____ _____

SIGNATURE OF EAP 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 E: Public Participation

Appendix F: Impact Assessment

Appendix G: Environmental Management Programme (EMPr)

Appendix H: Details of EAP and expertise

Appendix I: Specialist's declaration of interest

Appendix J: Additional Information