the denc

Department:
Environment & Nature Conservation
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:

- 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.
- This report format is current as of **08 December 2014**. It is the responsibility of the applicant to ascertain whether subsequent versions of the form have been published or produced by the competent authority
- 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.
- Where applicable **tick** the boxes that are applicable in the report.
- An incomplete report may be returned to the applicant for revision.
- 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.
- This report must be handed in at offices of the relevant competent authority as determined by each authority.
- No faxed or e-mailed reports will be accepted.
- The signature of the EAP on the report must be an original signature.
- The report must be compiled by an independent environmental assessment practitioner.
- 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.
- A competent authority may require that for specified types of activities in defined situations only parts of this report need to be completed.
- 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.		

PROPOSED UPGRADE OF THE KOMAGGAS WATER SUPPLY SYSTEM, NAMA KHOI LOCAL MUNICIPALITY, NAMAKWA DISTRICT MUNICIPALITY, NORTHERN CAPE

- **ACTIVITY DESCRIPTION**

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

Komaggas is situated in the Nama Khoi Municipal Area in the Northern Cape Province.

The increasing demand for proper housing in Komaggas has led to an increased demand for drinking water. At present water is pump from various boreholes through supply pipelines to two (2) storage reservoirs. The available water is insufficient for the community of Komaggas and shortages are experienced, especially during the dry summer seasons. The water levels in the municipal boreholes has declined considerably over the years due to the ongoing drought conditions experienced in the region and the over abstraction of the boreholes. The supply from the existing boreholes are therefore not feasible to ensure adequate water supply to the community of Komaggas.

The general condition of the infrastructure is poor and has reached the end of its useful design life. The primary problem on the existing infrastructure is the age thereof and lac of extensive maintenance over a long period of time.

The project comprises of the following:

- Construction of new 1.5 Ml Reservoir (Next to the existing reservoir at Komaggas);
- Construction of a new pipeline between borehole BR 18/2 & BR18/3 (Underground pipeline of approximately 646 m);
- Refurbishment of the existing water main from Buffelsrivier Reservoir to Kwaddas Reservoir and pump station (Underground pipeline of approximately 3.23 km with a Ø160 mm);
- Refurbishment of the existing water main from Kwaddas Reservoir to Voorberg Booster Pump Station and Reservoir (Underground pipeline of approximately 9.75 km with a Ø160 mm);
- Refurbishment of existing water main from Voorberg to Balancing Reservoir No. 3 (Above ground pipeline of approximately 5.13 km with a Ø150mm)
- Refurbishment of existing water main from Balancing Reservoir No. 3 to Komaggas (Above ground pipeline of approximately 6.77 km with a Ø150mm)
- Refurbishment of existing pump stations;
- Construction of a new pipeline from borehole KG19-DT5 (Above ground pipeline of approximately 525 m);
- Construction of a new pipeline from borehole KG19-DT1 (Above ground pipeline of approximately 230 m);
- Construction of Electrical Supply lines to new boreholes:
- Upgrading of service roads to all boreholes

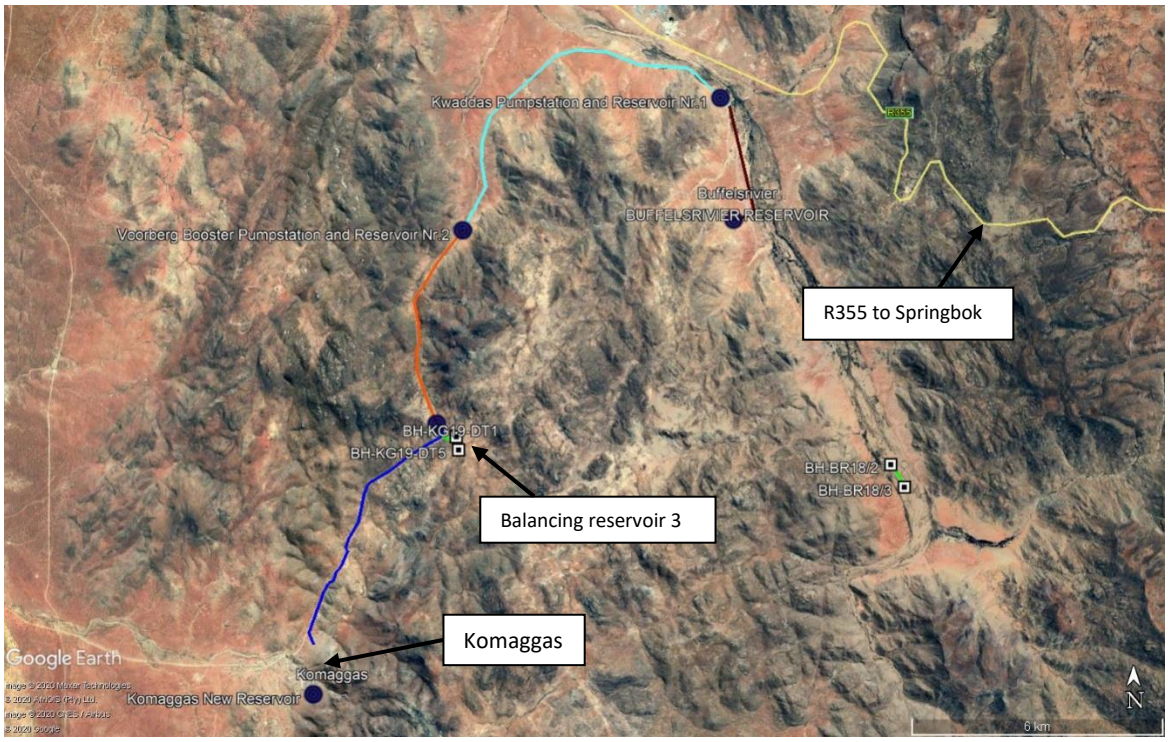

Figure 1: Google Earth Aerial view of the site.

Table 1: Co-ordinates for the pipeline replacement route

Infrastructure description:	LATITUDE (S):	LONGITUDE (E):
Borehole BR18/3	29°45'31.68"S	17°38'31.81"E
Borehole BR18/2	29°45'13.97"S	17°38'19.57"E
Buffelsrivier reservoir	29°42'2.87"S	17°35'56.80"E
Kwaddas pump station & reservoir (Reservoir 1)	29°40'27.11"S	17°35'45.07"E
Voorberg booster pump station & reservoir (Reservoir 2)	29°42'11.26"S	17°31'52.41"E
Balancing reservoir No. 3	29°44'42.27"S	17°31'30.49"E
Borehole KG19-DT1	29°44'51.42"S	17°31'48.37"E
Borehole KG19-DT5	29°45'1.69"S	17°31'50.38"E
Komaggas new reservoir	29°48'13.18"S	17°29'38.65"E

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

Listed activity as described in GN 324, 325 and 327	Description of project activity
Listing Notice 1 (GN327)	
Activity 9: The development of infrastructure exceeding 1000 meters in length for the transportation of stormwater – (i) with an internal diameter of 0,36m or more; (ii) (ii) with a peak throughput of 120 litres per second or more;	
Activity 12: The development of; (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs; (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;.	The proposed development includes the development of new infrastructure (pipelines) which will exceed 100sqm, and is located less than 32m from a watercourse.
Activity 19: The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.	The proposed development is located adjacent to an existing watercourse (ephemeral stream). The watercourse may be infilled and/or excavated during construction of the pipelines.
Activity 48: The **expansion** of; (i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or (ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more; where such expansion occurs; (a) within a watercourse; (b) in front of a development setback; or	The proposed development includes the expansion of existing infrastructure (additional pipelines) will exceed 100sqm, and is located less than 32m from a watercourse.

(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	
Listing Notice 3 (GN324)	
Activity 2*:* The development of reservoirs with the capacity of more than 250m³ (g) Northern Cape (iii) Outside urban areas: (dd) CBA as identified in systematic biodiversity plans adopted by the competent authority	A new 1.5 Ml Reservoir will be constructed
Activity 12*:* The **clearance of an area** of 300 square metres or more of **indigenous vegetation** except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.	More than 300m² of vegetation will need to be cleared to construct the additional reservoir and pipelines.
Activity 14*:* The **development** of; (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 10 square metres; (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs; (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; Excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;	The proposed development includes the development of infrastructure (pipelines and reservoir) will exceed 10m², and is located less than 32m from a watercourse.
Activity 23: The **expansion** of; (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 10 square metres; (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such expansion 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 expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;	The proposed development includes the expansion of existing infrastructure (additional pipelines) will exceed 10sqm, and is located less than 32m from a watercourse.

• 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

Site alternatives are limited, as it needs to be close to the existing Waste Water Treatment Works. According to the Botanical Impact Assessment (**Appendix D1**), there is no logical alternative site, and the property is already degraded to some degree.

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
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		

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 lay-out map provided in Appendix A of this form.

b) Lay-out alternatives

There are no feasible layout alternatives that were considered

Alternative 1 (preferred alternative)		
Description	Lat (DDMMSS)	Long (DDMMSS)
There are no feasible alternative layouts considered that would mitigate any potential environmental impact		
Alternative 2		
Description	Lat (DDMMSS)	Long (DDMMSS)
Alternative 3		
Description	Lat (DDMMSS)	Long (DDMMSS)

c) Technology alternatives

No technology alternatives were considered.

Alternative 1 (preferred alternative)
Alternative 2
Alternative 3

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

Alternative 1 (preferred alternative)		
Alternative 2		
Alternative 3		

e) No-go alternative

This would mean that no-development would take place and the proposed site will remain as is. No expansion and upgrade to the existing water reticulation will take place for the town of Komaggas and the demand for additional water supply will not be met.

The no-go option would only have been recommended if it were found that the construction of the proposed development on this site or in this area might potentially cause substantial detrimental harm to the environment.

According to the Biodiversity Assessment (**Appendix D1**), the No-Go option means the *status quo* will be maintained, but veld will still be impacted by urban and agricultural related activities. Water is a basic right an all communities should have access to drinking water.

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

- **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 (preferred activity alternative)		ha
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)		Approximately 26 300m
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

- **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		N/A

Describe the type of access road planned:

No new access roads will be 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.

- **LOCALITY MAP**

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

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

- **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.

- **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.

- **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.

- **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.

- **ACTIVITY MOTIVATION**

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

• **Is the activity permitted in terms of the property's existing land use rights?**	YES	~~NO~~	Please explain
The site is on municipal communal land.			
• **Will the activity be in line with the following?**			
(a) Provincial Spatial Development Framework (PSDF)	YES	NO	Please explain
The increasing demand for proper housing in Komaggas has led to an increased demand for drinking water.			

The community of Komaggas is totally dependent of water abstracted from boreholes and the water that is supplied from Buffelsrivier. The current system of Buffelsrivier must be upgraded to ensure a constant water supply from Buffelsrivier to Komaggas. The proposed development will also provide job opportunities for the community.			
(b) Urban edge / Edge of Built environment for the area	~~YES~~	NO	Please explain
The pipeline route and reservoir are located outside the developed area of Komaggas.			
(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 Municipality is the Applicant. The increasing demand for proper housing in Komaggas has led to an increased demand for drinking water. The community of Komaggas is totally dependent of water abstracted from boreholes and the water that is supplied from Buffelsrivier. The current system of Buffelsrivier must be upgraded to ensure a constant water supply from Buffelsrivier to Komaggas. The upgrade to the water infrastructure in Komaggas will ensure adequate water supply to the community for at least the next 20 years. The proposed development is included in the Nama Khoi IDP Review (2017-2022) in the list of projects towards service delivery improvement. The proposed development will also provide job opportunities for the community.			
(d) Approved Structure Plan of the Municipality	YES	NO	Please explain
The Municipality is the Applicant. The increasing demand for proper housing in Komaggas has led to an increased demand for drinking water. The community of Komaggas is totally dependent of water abstracted from boreholes and the water that is supplied from Buffelsrivier. The current system of Buffelsrivier must be upgraded to ensure a constant water supply from Buffelsrivier to Komaggas. The proposed development is included in the Nama Khoi IDP Review (2017-2022) in the list of projects towards service delivery improvement. The proposed development will also provide job opportunities for the community.			
(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 was identified			

(f) Any other Plans (e.g. Guide Plan)	YES	NO	Please explain
• **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
• **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 increasing demand for proper housing in Komaggas has led to an increased demand for drinking water. The community of Komaggas is totally dependent of water abstracted from boreholes and the water that is supplied from Buffelsrivier. The current system of Buffelsrivier must be upgraded to ensure a constant water supply from Buffelsrivier to Komaggas. The proposed development will also provide job opportunities for the community.			
• **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 project is to provide additional water supply and capacity services for the community. The Municipality is the Applicant.			
• **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 Applicant is the municipality			
• **Is this project part of a national programme to address an issue of national concern or importance?**	YES	~~NO~~	Please explain
Sufficient and functioning basic services, including water provision, is a national concern			

• **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 location has been identified by the engineers as suitable for the proposed development. There are no significant negative environmental impacts that have been identified by the botanical or heritage specialists.			
• **Is the development the best practicable environmental option for this land/site?**	YES	NO	Please explain
The proposed development will result in the loss of some indigenous vegetation over the site, however, the vegetation is considered least threatened and the site slightly disturbed in places. it is also unlikely that any significant archaeological or palaeontological resources will be impacted. No significant environmental impacts associated with the proposed development have been identified.			
• **Will the benefits of the proposed land use/development outweigh the negative impacts of it?**	YES	~~NO~~	Please explain
No significant negative environmental impacts are expected by the proposed development and the benefits of better water supply to the town and its residents will outweigh any negative impacts.			
• **Will the proposed land use/development set a precedent for similar activities in the area (local municipality)?**	~~YES~~	NO	Please explain
N/A			
• **Will any person's rights be negatively affected by the proposed activity/ies?**	YES	NO	Please explain
No person's rights are expected to be negatively affected by the proposed development. The activity is expected to have a general positive impact on the surrounding area.			
• **Will the proposed activity/ies compromise the "urban edge" as defined by the local municipality?**	~~YES~~	NO	Please explain
Unknown. The development is located outside the built up/urban area of Komaggas.			
• **Will the proposed activity/ies contribute to any of the 17 Strategic Integrated Projects (SIPS)?**	YES	~~NO~~	Please explain
The proposed bulk water supply system in Komaggas is considered to contribute to SIPS 18: **SIP 18: Water and sanitation infrastructure** A 10-year plan to address the estimated backlog of adequate water to supply 1.4m households and 2.1m households to basic sanitation.			
• **What will the benefits be to society in general and to the local communities?**	Please explain		
The project will provide job opportunities during the construction and the operational phase.			

This development has the potential to provide an economic injection in the local community, by means of creating employment opportunities.

The proposed development will increase the income generated by the study area, which is currently non-existent.

Most importantly, it will provide reliable and additional water capacity to the town of Komaggas and Buffelsrivier.

• **Any other need and desirability considerations related to the proposed activity?**	Please explain

N/A

• **How does the project fit into the National Development Plan for 2030?**	Please explain

N/A

- **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 have been taken into account through the following:

- The actual and potential impacts of the activity on the environment, socio-economic conditions and cultural heritage have been identified, predicted and evaluated, as well as the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impact, maximizing benefits and promoting compliance with the principles of environmental management – *please refer to Section D below*.
- The effects of the activity on the environment have been considered before actions taken in connection with them – *alternatives have been considered and investigated (please refer to Section A below).*
- Adequate and appropriate opportunity for public participation was ensured through the public participation process – *please refer to Section C for the public participation information, including the list of identified Interested and Affected parties, as well as the methods for identifying and informing I&APs of the application and proposed activity*.
- The environmental attributes have been considered in the management and decision-making of the activity – *an EMP has been included (**Appendix G**) with the proposed activity and must adhere to the requirements of all applicable state Authorities.*

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

- People and their needs have been placed at the forefront while serving their physical, psychological, developmental, cultural and social interests – *the proposed activity will have a beneficial impact on people, as it will provide much needed additional housing opportunities.*
- Development must be socially, environmentally and economically sustainable. Where disturbance of ecosystems, loss of biodiversity, pollution and degradation, and landscapes and sites that constitute the nation's cultural heritage cannot be avoided, are minimised and remedied.
- Where waste cannot be avoided, it is minimised and remedied through the implementation and adherence of EMP.
- The use of non-renewable natural resources is responsible and equitable – *no exploitation of non-renewable natural resources occurs with the proposed activity.*

- The negative impacts on the environment and on people's environmental rights have been anticipated and prevented, and where they cannot be prevented, are minimised and remedied - *refer to Section F below*.
- The interests, needs and values of all interested and affected parties have been taken into account in any decisions through the Public Participation Process – *please refer to Section C for the public participation information.*
- The social, economic and environmental impacts of the activity have been considered, assessed and evaluated, including the disadvantages and benefits – *refer to Section B below.*
- The effects of decisions on all aspects of the environment and all people in the environment have been taken into account, by pursuing what is considered the best practicable environmental option – *the proposed activity is expected to have minimal/negligible environmental impacts, especially after mitigation measures as described under Section D and E and in the EMP are implemented.*

• 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 Water Act	Water Use Licence	Department of Water and Sanitation	Not yet
Northern Cape Nature Conservation Act, Act 9 of 2009	NCNCA Protected plant species located on the site	Department of Environment and Nature Conservation (DENC)	Not yet

• 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 approved municipal landfill 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 approved municipal landfill 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)?		

No solid waste is expected to be generated during the operational phase.
If the solid waste will be disposed of into a municipal waste stream, indicate which registered landfill site will be used.
No solid waste is expected to be generated during the operational phase.
Where will the solid waste be disposed of if it does not feed into a municipal waste stream (describe)?
N/A
If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, then the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.

Can any part of the solid waste be classified as hazardous in terms of the NEM:WA?	~~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?		N/A
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 waste water, 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 activity is not expected to produce significant noise that would be a nuisance to any nearby residents.		

• 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:	990kl/day 29 700kl/month

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.		

- **ENERGY EFFICIENCY**

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

N/A

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

N/A

SECTION B: SITE/AREA/PROPERTY DESCRIPTION

Important notes:

- 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):	

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

• 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	Namakwa District Municipality
	Local Municipality	Nama Khoi Municipality
	Ward Number(s)	
	Farm name and number	RE/2
	Portion number	
	SG Code	C05300060000000200000
	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:	Community
	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~~

- **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

- **LOCATION IN LANDSCAPE**

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

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

- **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.

- **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

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.

- **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.

There are two major watercourses identified on SANBI BGIS within close proximity to the proposed development:

- Komaggas River
- Buffels River

The Komaggas River is a tributary of the Buffels River. The Buffels River is a non-perennial.

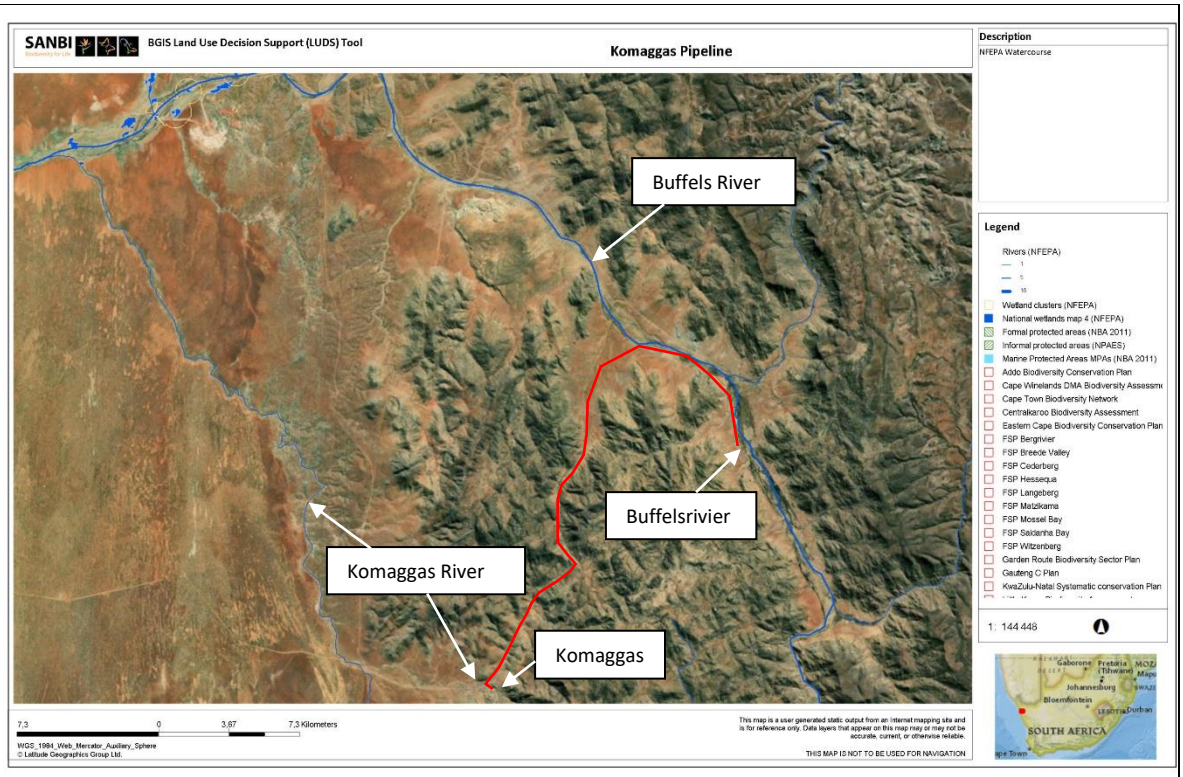

Figure 2: SANBI BGIS image of the site, showing the nearest watercourses to the site (red line)

According to the Freshwater Assessment (**Appendix D2**), the pipeline follows roughly a semicircle, first to the north west along the Buffels River, then over the hills and mountain sides into the Komaggas River, a tributary of the Buffels River, in an easterly direction, then along the Komaggas River to the south. The pipeline crosses the road and the Komaggas River several times.

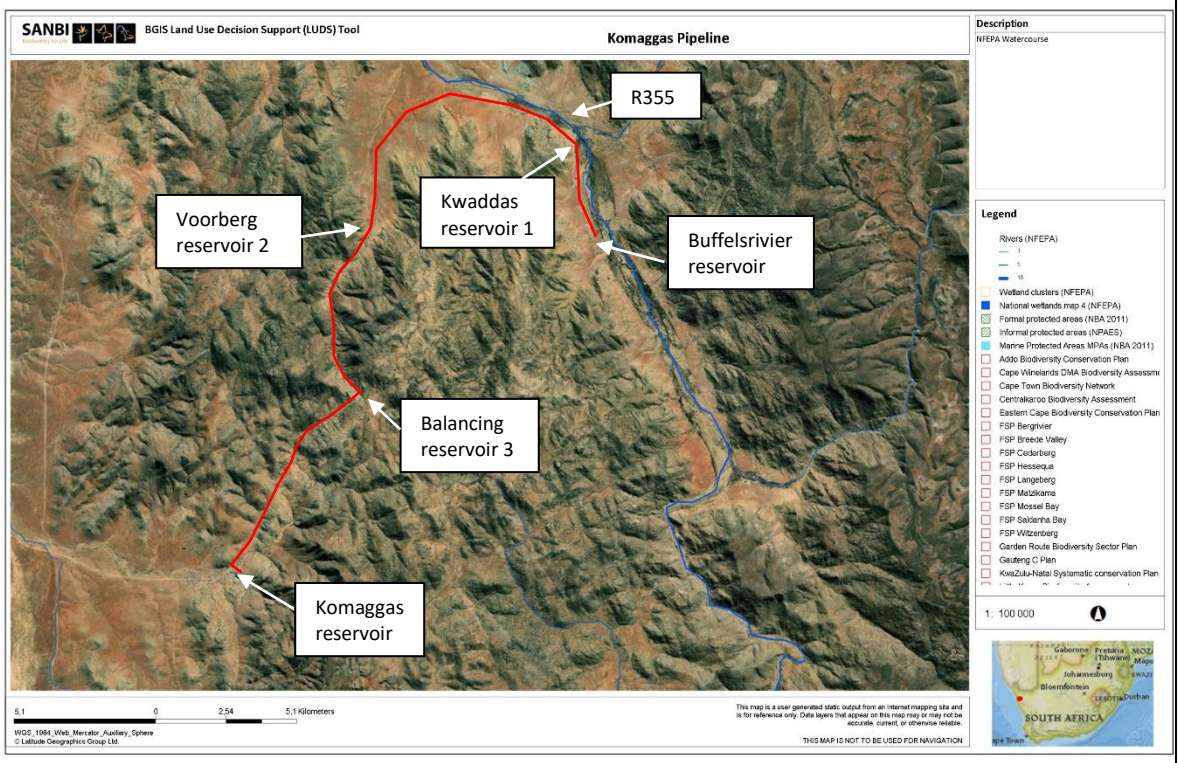

Figure 3: SANBI BGIS image of the site, showing the pipeline route (red line) and location of the reservoirs.

According to the Freshwater Assessment (**Appendix D2**), a new reservoir is to be constructed adjacent to the existing reservoir, up against the hill above the township of Komaggas. The envisaged reservoir is not located near any natural drainage line and therefore, if constructed, not have any impact on the aquatic environment.

There is going to be a new small water storage facility of 78Kl at Buffelsrivier. This is going to be high up the hill and won't have any impact at all on the aquatic environment.

The pipeline follows the Komaggas River, and the Komaggas Road (linking Komaggas and the R355) in a north-eastern direction. The pipeline crosses the Komaggas in a number of locations. At Komaggas the pipeline crosses the river underground.

For 2.5km out of the town, the pipeline is more than a 100m from the river. It crosses the river through a culvert underneath the road. The existing pipeline has little impact on the aquatic environment at 2.5km.

From the 2.5km to the balancing reservoir no. 3 crosses the river approximately 3 times, and other drainage lines approximately 4 times. There is not any noticeable impact on the aquatic environment, the impact was during the construction phase and is no longer apparent, but the pipeline is prone to be damaged during heavy floods.

There are 11 crossings between Reservoir 3 and Reservoir 2 (Voorberg pump station). The pipeline here is aboveground as well, mounted on pedestals. The issues are exactly the same as of the previous section of the pipeline. The impact on the aquatic environment is negligible. The pipeline is vulnerable to major floods. Vulnerability can be addressed by digging the pipe in underground through the river bed, where possible.

Adjacent and to the north of Reservoir 2, there is a sub-catchment watershed boundary. To the south of that the flow is down the Komaggas River to the south west. To the north of that the flow is towards the north east down a short drainage line thatfinds its way to the Buffels River.

Between reservoir 2 and reservoir 1, the existing pipeline is underground. It is away from any rivers or drainage lines. It could not have had any impact on the aquatic environment during its construction phase. If ever it is dug up to be replaced by a larger pipeline, it would not have any impact on the aquatic environment either.

The section of pipeline between reservoir 1 and the Buffelsrivier reservoir also runs underground. It passes underneath a drainage line that enters the Buffels River nearby. It runs underneath a short reach of the Buffels River broad and sandy bed. From there to the Buffelsrivier Reservoir it does not have any effect on the aquatic environment.

The network is connected to boreholes further upstream in the Buffels River, right in the flood plain. This pipeline is underground as well. There is no visible impact.

Please refer to Section 8.5 of the Freshwater Assessment for more details.

• LAND USE CHARACTER OF SURROUNDING AREA

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

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

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

No impacts are expected.

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:

No impacts are expected.

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

- **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~~
	Uncertain	
According to the Archaeological Impact Assessment (**Appendix D3**), a small number of isolated Middle Stone Age tools were recorded during the field assessment. Previous archaeological assessments undertaken in the same area, has also noted the low density of archaeological resources in the surrounding landscape. The small numbers, isolated and disturbed context in which they were found, mean that the archaeological remains have been rated as having *LOW* (Grade IIIC) significance. No graves, or typical grave features such as stone cairns were encountered. The field study identified no significant impacts to pre-colonial archaeological heritage that will need to be mitigated prior to proposed construction activities commencing. While it is possible that proposed construction activities may impact on archaeological resources, it is likely that these resources will have low archaeological significance. The nature of the proposed development also requires minimal surface disturbance and excavations. The overall impact significance of the proposed Kommagas Water Supply Project on archaeological heritage is assessed as LOW and therefore there are no objections to the development proceeding. According to the Palaeontological Impact Assessment (**Appendix D4**), the proposed pipeline is installed shallowly underground in late Quaternary (Q-s2) deposits up to the Voorberg location, from where it proceeds above ground across the gneiss bedrock. The anticipated impact of shallow earthworks in the superficial Quaternary deposits is rated as LOW, in conformity with the S. Afr. Heritage Information System (SAHRIS) Palaeontological Sensitivity Map. Furthermore, the new water main pipeline replaces the old pipeline in the existing disturbed material of the shallow trench, further decreasing the potential for fossil finds. Notwithstanding, although improbable, a chance occurrence of fossil bone material cannot be entirely dismissed.		

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:
Please refer to findings above, and the Archaeological Impact Assessment (**Appendix D3**) and Palaeontological Impact Assessment (**Appendix D4**).

Will any building or structure older than 60 years be affected in any way?	~~YES~~	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	~~NO~~
If YES, please provide proof that this permit application has been submitted to SAHRA or the relevant provincial authority.		

Section 38 (1) (a) of the Act also stipulates that any person constructing a powerline, pipeline or road, or similar linear development or barrier exceeding 300m in length is required to notify the responsible heritage resources authority, who will in turn advise whether an impact assessment report is needed before development can take place.

The project is therefore subject to Section 38(1) of the NHRA. The project has been registered with SAHRA through SAHRIS.

• 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:

Unknown. No recent data, however, in 2011 the unemployment rate was 22.9%

Economic profile of local municipality:

According to the Nama Khoi Integrated Development Plan 2017 - 2022, the total number of households in Nama Khoi increased by 4 818 households over the period 1996 to 2016, from 9 729 to 14 547. This shows a significant increase in the number of three-person households, from 1 610 in 1996 to 3 196 in 2016.

Level of education:

According to the Nama Khoi Integrated Development Plan 2017 – 2022, there was a decline in the number and proportion of persons aged 20 years and above with no schooling (from 11.1% to 1.5%). This shows an increase in the proportion of persons with a higher education, from 4.7% in 1996 to 7.2% in 2016. There is a significant increase in the proportion of persons who have grade 12/standard 10.

b) Socio-economic value of the activity

What is the expected capital value of the activity on completion?	R 20 500 000	
What is the expected yearly income that will be generated by or as a result of the activity?	N/A	
Will the activity contribute to service infrastructure?	YES	~~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	
What is the expected value of the employment opportunities during the development and construction phase?	R1 000 000 during construction phase	
What percentage of this will accrue to previously disadvantaged individuals?	100%	

How many permanent new employment opportunities will be created during the operational phase of the activity?	1
What is the expected current value of the employment opportunities during the first 10 years?	R2 000 000
What percentage of this will accrue to previously disadvantaged individuals?	100%

- **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 site is located within a CBA identified on SANBI BGIS (refer to Figure 4 below and section 4.3 of the Botanical Assessment (**Appendix D1**).

According to the Botanical Assessment (**Appendix D1**), the Namakwa District Biodiversity Sector Plan (NDBSP) 2008, gives both aquatic and terrestrial Critical Biodiversity Areas (CBAs) and ecological support areas for the Namakwa District Municipality. According to the Northern Cape CBA map, the proposed development falls within a terrestrial CBA. However, there is no alternative site on the property or its immediate vicinity that is not located within the CBA.

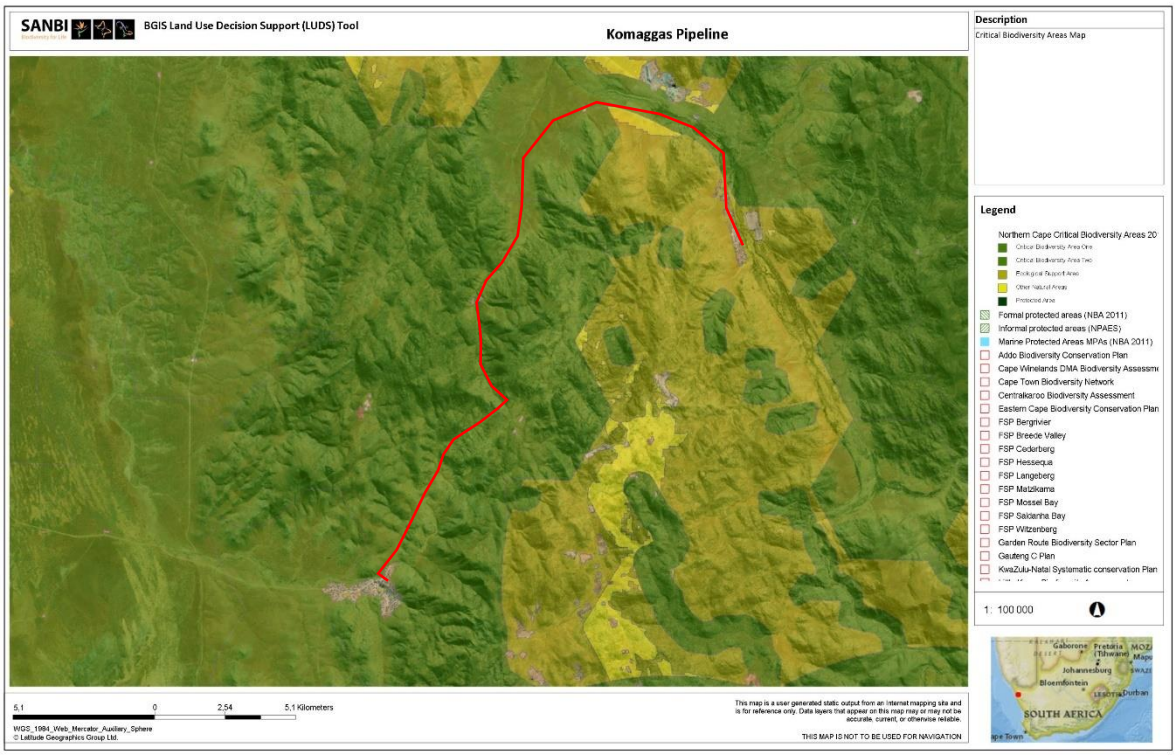

Figure 4: SANBI BGIS image of the site, showing the pipeline route (red line) located within a CBA.

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 of alien invasive plants)	80%	According to the Botanical Assessment (**Appendix D1**), the proposed development footprint is located on Communal land, with very low agricultural potential. Portions of the footprint had already been degraded as a result of past practices.
Degraded (includes areas heavily invaded by alien plants)	20%	
Transformed (includes cultivation, dams, urban, plantation, roads, etc)		

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~~ ~~Endangered~~ ~~Vulnerable~~ Least Threatened	Wetland (including rivers, depressions, channelled and unchanneled wetlands, flats, seeps pans, and artificial wetlands)			Estuary		Coastline	
		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)

According to the Biodiversity Assessment (**Appendix D1**), in accordance with the Vegetation map of South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006, as updated in the 2012 beta version) two broad vegetation types are expected within the proposed footprint, namely Namaqualand Blomveld and Namaqualand Klipkoppe Shrubland (see Figure 5 below).

Both these vegetation types are classified as "Least Threatened" (GN 1002, December 2011). Namaqualand Riviere is expected within the floodplains of the dry seasonal rivers such as the Buffels River in this study area.

According to the Biodiversity Assessment (**Appendix D1**), the new proposed connecting pipeline between boreholes BR18/2 and BR18/3 will be located within the floodplain of the Buffels River. The vegetation is typical of what is expected in most of the dry seasonal streams and rivers found in the Namaqualand, and conforms to Namaqualand Riviere vegetation as described by Mucina & Rutherford (2006).

From the Buffelsrivier reservoir, the replacement pipeline will run (east) through the town to the edge of the urban area from where it turns south, following the western bank of the river to the settlement of Kwaddas and the Kwaddas Reservoir (the reservoir being located on a small koppies) (Figure 8). The pipeline going through the urban area of Buffelsrivier will not impact on any significant plant or tree species (almost no natural veld remaining), but as it turns south it will run along the edge of town, which is also more or less along the edge or within the floodplain of the Buffels River. It will impact almost exclusively on Namaqualand Riviere vegetation, which is the vegetation associated with the alluvial floodplains found in this part of the Namaqualand.

From the Komaggas turn-off to Voorberg pump station the pipeline moves away from the Buffels River and its associated floodplain. The landscape becomes more typical of Blomveld on yellow sandy soils. However, most of the proposed footprint seems to have been disturbed as a result of previous construction activities (including an overhead power line). Because of the on-going drought the vegetation cover was very sparse and no geophytes or spring annual flowers were visible.

From Voorberg the replacement pipeline will be placed above ground (on small movable concrete pedestals). The construction method means that the impact on vegetation will be almost negligible, especially as access will be almost exclusively by foot. The rocky hills are characterised by huge boulders and domes, slowly being weathered into course sand which are deposited as a shallow sandy layer on top or between these rocks. Again, because of the on-going drought the number of plant species observed was low (more species were expected). Fortunately, the construction method means that the potential impact will be relatively low to negligible.

At the site of the new Reservoir next to the existing reservoir at Komaggas, the vegetation on the lower slopes of the small hill on which the reservoir will be located is probably some of the most interesting in terms of plant species encountered during this study. Apart from common species that were found all over the klipkoppe like *Euphorbia mauritanica*, *Galenia africana*, *Cynanchum viminale* there were also species such as the small *Cheiridopsis denticulata* and *Tylecodon pearsonii* along the lower slopes beneath the proposed new location. A large planted alien *Schinus molle* tree was also observed beneath the existing reservoir.

For more details, please refer to Section 3.4 of the Botanical Impact Assessment (Appendix D1).

According to the Biodiversity Assessment (**Appendix D1**), the main impacts associated with the proposed development will be:

- The temporary impact on indigenous vegetation within a proposed CBA; and
- The potential impact on a number of provincially protected plant species.

However, this is a replacement project, meaning that 95% of the project will be located within an existing disturbance footprint.
The cumulative impact (even without mitigation) is expected to be **Medium-Low**, but this can be reduced to **Low or Very Low** through mitigation.

Table 1: Plant species protected in terms of the NCNCA encountered within the study area (Botanical Impact Assessment (Appendix D1, Table 4)

NO.	SPECIES NAME	COMMENTS	RECOMMENDATIONS
1.	*Cheiridopsis denticulata* **Schedule 2 protected**		**Search & rescue:** Only observed in the vicinity of the proposed new reservoir at Komaggas. Individuals within footprint to be transplanted to surrounding area.
2.	*Cynanchum viminale* **Schedule 2 protected**		Larger *Cynanchum* plants are expected to transplant poorly. Species protection through topsoil conservation.
3.	*Euphorbia mauritanica* **Schedule 2 protected**		Very common plant in this area. Species protection through topsoil conservation.
4.	*Galenia africana* **Schedule 2 protected**	This plant is weedy a disturbance indicator and commonly found in the Northern Cape.	No special measures needed, this is a weedy pioneer species.
5.	*Mesembryanthemum crystallinum* **Schedule 2 protected**	This plant is weedy a disturbance indicator and commonly found in the Northern Cape.	No special measures needed, this is a weedy pioneer species.
6.	*Mesembryanthemum guerichianum* **Schedule 2 protected**	This plant is weedy a disturbance indicator and commonly found in the Northern Cape.	No special measures needed, this is a weedy pioneer species.
7.	*Mesembryanthemum noctiflorum* **Schedule 2 protected**		Very common plant in this area. Species protection through topsoil conservation.
8.	*Stoeberia frutescens* **Schedule 2 protected**	Only occasionally observed and none directly within any footprint.	**Search & rescue:** Individuals within footprint to be transplanted to surrounding area.

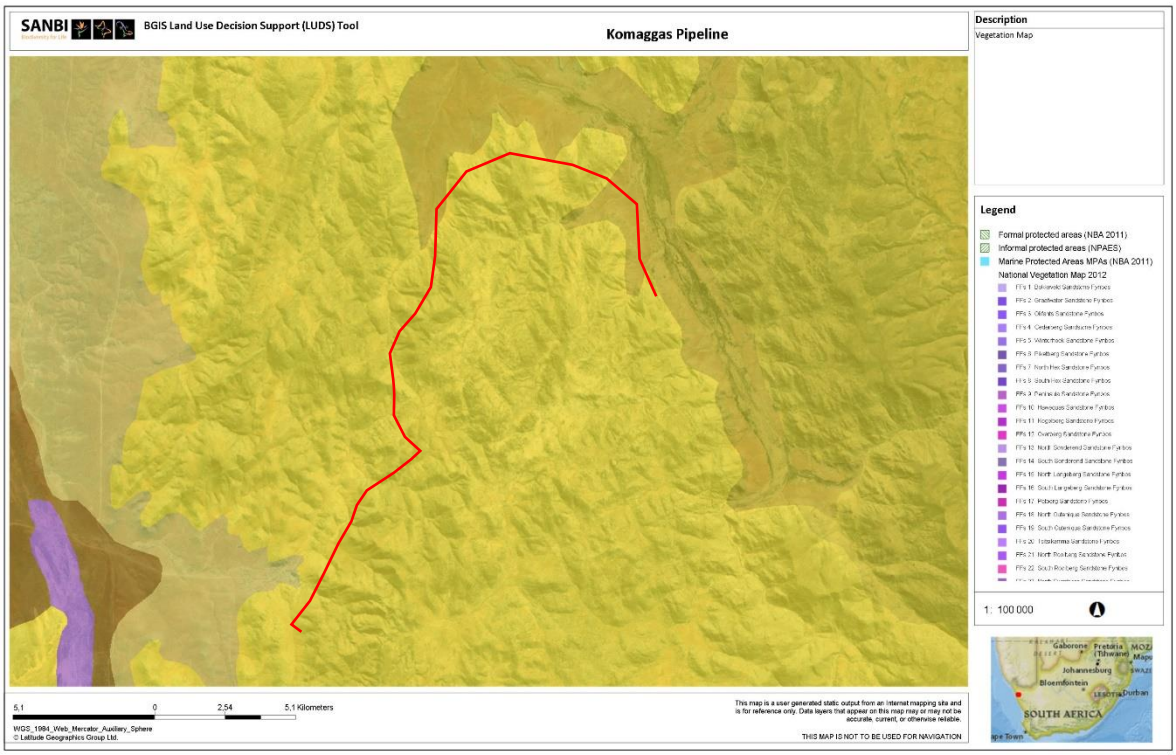

Figure 5: Vegetation Map indicating the location of the development (red line). The site is located within Namaqualand Blomveld and Namaqualand Klipkoppe Shrubland (Least Threatened).

SECTION C: PUBLIC PARTICIPATION

• ADVERTISEMENT AND NOTICE

Publication name	Kalahari Bulletin	
Date published	15 August 2019	
Site notice position	**Latitude**	**Longitude**
Date placed	See Appendix E1	

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

• 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.

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 E2. This proof may include any of the following:

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

• ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summary of main issues raised by I&APs	Summary of response from EAP
No comments were received during the initial PPP period	

- **COMMENTS AND RESPONSE REPORT**

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

- **AUTHORITY PARTICIPATION**

Authorities and organs of state identified as key stakeholders:

Authority/Organ of State	Contact person (Title, Name and Surname)	Tel No	Fax No	e-mail	Postal address
NC Department of Agriculture & Land Reform	W. Mothibi (HOD)	(053)838 9102			Private Bag X5018, Kimberley, 8300
Department of Cooperative Governance, Human Settlements and Traditional Affairs (NC)	Gladys Botha	053 830 9513			Private bag X5005, Kimberley, 8300
Department of Roads and Public Works	K. Nogwili (HOD)	(053)839 2241			P O Box 3132, Kimberley, 8300
Directorate Forestry Management	J. Mans	054 338 5909			PO Box 2782, Upington, 8800
Department of Water and Sanitation	Steven Shibambu				Private Bag X5912, Upington, 8800
Department of Water and Sanitation	Glen Stekenkamp				28 Central Road, Beaconsfield, Kimberley, 8301
SAHRA	Natasha Higgitt				P.O. Box 4637, Cape Town, 8000
Department of Health	Steven Jonkers				Private Bag X5049, Kimberley, 8300

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.

- **CONSULTATION WITH OTHER STAKEHOLDERS**

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

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

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

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

SECTION D: IMPACT ASSESSMENT

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

- **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: **Potential impact on freshwater ecosystems:**		
	Disturbance of river bed during trenching	Low - Negative (with mitigation)	• Limit the footprint • Level and landscape after construction • Exit pipe from the river bed well out of riparian zone
	Disturbance of drainage lines at crossings during the dismantling and construction of the new pipelines at drainage line crossings	Low - Negative (with mitigation)	• Limit footprint • Clean up after construction • If new pedestals are required, construct well out of riparian zone
	Create preferential flow paths	Medium - Negative (with mitigation)	• Prevent construction of new road • Limit use of roads

	Disrupt flow and promote replenishment of ground water as a result of reconstruction of retaining walls in Buffels River Destruction of tree line as a result of Ongoing abstraction of water from the alluvium	High - Negative (with mitigation) Medium - Negative (with mitigation)	• Limit footprint • Clean up after construction • Limit water abstraction to sustainable levels • Disallow increase of abstraction • Plan for alternative water resources • Monitor tree line and adjust abstraction according to monitoring results
	Biodiversity impacts: Land-use and Cover: Possible impact on socio-economic activities as a result of the temporary disturbance along the underground pipeline route (13 - 14km), which might impact on grazing practices. Vegetation Status: Possible loss of vulnerable or endangered vegetation and associated habitat. Conservation Priority Areas: Possible impact on Protected areas, CBA, ESA or centres of endemism. Connectivity: Possible loss of ecological corridors. Protected & endangered plant species: Potential impact on threatened or protected plant species. Invasive Alien Species: Possible alien infestation as a result of activities. Veld Fire:	Insignificant (with mitigation) Insignificant (with mitigation) Insignificant (with mitigation) Insignificant (with mitigation) Insignificant (with mitigation) Insignificant (with mitigation)	The following mitigation actions should be implemented to ensure that the proposed development does not pose a significant threat to the environment: • All construction must be done in accordance with an approved construction and operational phase Environmental Management Plan (EMP), which must include the recommendations made in this report. A suitably qualified Environmental Control Officer must 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 search & rescue must be completed. • Lay-down areas or construction sites must be located within the construction footprint. • No clearing of any area outside of the construction footprint may be allowed. • All waste that had been illegally dumped within the footprint must be removed to a Municipal approved waste disposal site. • An integrated waste management approach must be implemented during construction. - Construction related general and hazardous waste may only be disposed of at Municipal approved waste disposal sites. • Alien invasive *Prosopis* plants within the footprint (and immediate surroundings) must be removed in a responsible way (to ensure against regrowth).

	The risk of veld fires as a result of the proposed activities.		
	The loss of palaeontological resources	Insignificant	• No areas of particular palaeontological sensitivity are identified. • Notably, where the new water main pipeline is below ground in the superficial Q-s2 deposits, it replaces the pipeline in the existing disturbed material of the shallow trench, further decreasing the potential for fossil finds. • Notwithstanding, although improbable, a chance occurrence of fossil bone material cannot be entirely dismissed and when fossils are found in low-sensitivity formations, they are often very significant additions to the geological understanding of the area. • The monitoring of excavations by on-site personnel is recommended during installation of the upgraded water supply infrastructure, under supervision of the Environmental Control Officer (ECO). As part of Environmental and Health & Safety awareness training, personnel must be instructed to be alert for the occurrence of fossil bones, archaeological material and of unrecorded burials. • A basic Fossil Find Procedure for incorporation into the Environmental Management Programme for the project.
	The loss of archaeological resources	Insignificant	• No mitigation of archaeological resources is required is required prior to construction activities commencing. • If any human burials, or ostrich eggshell caches, for example, are uncovered during construction activities then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and will require inspection by a professional archaeologist. • The above recommendations must be included in the Environmental Management Plan

			(EMP) for the proposed development.
	Indirect impacts: **Temporary jobs will be created in the construction industry during the construction phase.**	Low - positive	No mitigation measures are required. Temporary jobs will be created during the construction phase
	Cumulative impacts: Biodiversity: Accumulative impact associated with the proposed activity.	Insignificant	
	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 that no-development would take	Insignificant	N/A

	place and the proposed site will remain as is. No new bulk water supply system will be constructed, and no new water supply will be created for the town of Kamieskroon. Although this option would result in no potential negative environmental impacts, the socio-economic benefits from implementing the activity would not be achieved. The no-go option would only have been recommended if it were found that the construction of the proposed development on this site or in this area might potentially cause substantial detrimental harm to the environment. According to the Biodiversity Assessment (**Appendix D3**), the No-Go option is not likely to result in a "no-impact" scenario, as constant slow degradation is expected to continue as a result of urban activities and grazing in and around the site.		
	Indirect impacts:		
	Cumulative impacts:		

A complete impact assessment in terms of Regulation 19(3) of GN 326 must be included as Appendix F.

- **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 following is a summary of the potential impacts, and their ratings after mitigation, and probability of occurrence:

Construction phase.

Freshwater ecosystems:

Disturbance of river bed during trenching - **Low - Negative**

Disturbance of drainage lines at crossings - **Low - Negative**

Create preferential flow paths - **Medium - Negative**

Disrupt flow and promote replenishment of ground water – **High - Negative**

Destruction of tree line - Medium - Negative

Loss of vegetation:

Land-use and Cover – **Insignificant.**
Vegetation Status – **Insignificant.**
Conservation Priority Areas – **Insignificant.**
Connectivity – **Insignificant.**
Threatened or protected plant species. – **Insignificant.**
Invasive Alien Species – **Insignificant.**

Potential impacts on heritage resources – **Negligible, Unlikely.**

Job creation – **Low (Positive)**, **definite**.

Noise impact - **Low (negative), definite, during construction phase.**

Visual impact – **Low (negative), definite, during construction**

Operational Phase

Geographical and/or physical aspects - **No impact expected**

Freshwater ecosystems **– Low, Possible**

Potential impacts on archaeological heritage – **No impact expected**

Socio-economic (additional job opportunities) – **Low (Positive), Definite**

Nuisances –**Low, Possible**

Visual impact – **Low, Probable**

Decommissioning

The project as proposed does not require 'decommissioning' or 'closure', as such the potential impacts thereof is considered irrelevant.

Alternative B

Alternative C

No-go alternative (compulsory)

This would mean that no-development would take place and the proposed site will remain as is. No expansion and upgrade to the existing water reticulation will take place for the town of Komaggas and the demand for additional water supply will not be met.

The no-go option would only have been recommended if it were found that the construction of the proposed development on this site or in this area might potentially cause substantial detrimental harm to the environment.

According to the Biodiversity Assessment (**Appendix D1**), the No-Go option means the *status quo* will be maintained, but veld will still be impacted by urban and agricultural related activities. Water is a basic right an all communities should have access to drinking water.

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).

N/A

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.

Compliance with the EMP and recommendations of the specialists and appointment of an ECO during the construction phase.		
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